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# NAVAL AIR DEVELOPMENT CENTER

WARMINSTER, PA. 18974

REPORT NO. NADC 73235-30

15 NOVEMBER 1973

NAVAIRDEVCCN GRAPHITE-EPOXY COMPOSITE WING  
FOR BQM-34E; STRESS AND VIBRATION ANALYSIS

FINAL REPORT

AIRTASK NO. A320000/001B/4F41422206  
WORK UNIT HJ 202

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DEPARTMENT OF THE NAVY  
NAVAL AIR DEVELOPMENT CENTER  
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A weight saving of 54 percent has been achieved in the in-house design and fabrication of a composite wing for the BQM-34E aerial target vehicle. Design criteria are identical to those of the 5g production metal wing. Results of the stress analyses indicate adequate margins of safety.

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## INTRODUCTION

The Naval Air Development Center (NAVAIRDEVCON) has recently completed the design, analysis, fabrication and static testing of a graphite-epoxy composite wing for the unmanned BQM-34E aircraft. A weight saving of 54 percent has been achieved while meeting all static strength and static and dynamic aeroelastic requirements.

The BQM-34E is a high-altitude, supersonic, recoverable aerial target vehicle. The wing has a 9-foot span and an aspect ratio of 2.5. Other dimensions are shown in Figure 1. The main panel of the production design consists of chem-milled stainless steel skins bonded to an aluminum honeycomb core. The outboard panels are made of fiberglass-reinforced plastic. With the exception of the outboard panels, the entire wing is factory-assembled by adhesive bonding and riveting. Its total weight is 157 pounds, about 30 percent of the structural weight of the aircraft.

In the composite wing design, emphasis was placed on reducing the weight and the number of major subassemblies while maintaining the original airfoil shape and planform. The development was initiated under Independent Research (reference (a)) as an in-house effort whose objectives were to exploit the improved material properties of advanced filamentary reinforced composites, to obtain an optimum design with minimum weight and to allow acquisition of service experience on a primary structural component of a high performance vehicle with no risk to human life. The final design, analysis, fabrication and testing of the wing were carried out entirely in-house under reference (b). Following the successful static testing at NAVAIRDEVCON, flight testing commenced at the Naval Missile Center (NAVMLSCEN), Point Mugu, Ca.

Results of static and flutter analyses of a preliminary wing design have been reported previously in references (c) and (d). The static aeroelastic and flutter analyses and static test of the final design are described and their results presented in references (e) and (f). This report presents the procedure and results of the final stress and vibration analyses and includes the following:

- a. composite and core material characteristics including material stiffness properties and allowable stresses;
- b. descriptions of the wing structure and the finite element model used for the analyses;
- c. results of the stress and vibration analyses;
- d. computation of critical stresses and margins of safety for the skins and core.



## DESIGN CRITERIA

The flight conditions for the composite wing are the same as for the production metal wing, and are described in reference (g), in which the critical flight conditions and the resulting shear, torque and bending loads are presented. The equivalent static test loads are specified in reference (h).

The exposed planform and aerodynamic profile of the composite wing are identical to those of the metal wing. Size and location of fuselage attachment bolts are the same to allow installation of the wing without modification of the fuselage. In addition, the maximum airfoil section depth is limited to 1.62 inches. Finally, to facilitate manufacture, reduce vulnerability to accidental damage, and maintain balance of the laminate, the minimum composite skin thickness has been set at five plies (0.030 in.).

Sufficient stiffness of the wing is required to preclude static and dynamic aeroelastic instabilities throughout the flight envelope. A discussion and analyses of these effects are contained in reference (e).

Stiffness and strength properties of the unidirectional graphite-epoxy material and of the several laminate constructions used in the wing, as well as those of the core materials are listed in Table I. Since, in general, advanced composites exhibit little static yielding, strength calculations for the laminated skins are based solely on ultimate stresses. For the unmanned aircraft, ultimate loads are 25 percent over limit.

## DESCRIPTION OF WING STRUCTURE

The principal features of the composite wing construction are shown in Figure 2. Laminated graphite-epoxy skins, varying in thickness from 5 to 30 plies (.030 to .180 in.), are adhesive bonded to the aluminum honeycomb core. The laminate construction varies over the planform. The number of plies of each orientation is varied to meet local stiffness and strength requirements and to maintain balanced construction. In the center section and in the outboard two-thirds of the exposed span, the core density is 4.5 lb./ft.<sup>3</sup>. Inboard, where shear loads are higher, and particularly in the vicinity of the attachments, higher density core materials (6.1, 8.1 and 23.0 lb./ft.<sup>3</sup>) are used. The leading edge is a molded solid section of chopped fiber covered by a four-ply,  $\pm 45^\circ$  laminated skin.

To close out the center section and the fuselage interface, and to distribute the attachment bolt reaction loads, channel sections of  $\pm 45^\circ$  construction are placed in the core. Attachment bolt loads are transferred to the adjoining structure by means of titanium flanges bonded

inside the skins and spool-shaped aluminum fittings inserted into the core. Across the aft end of the center section, where the bending moment is highest and the attachment bolt load is most critical, the graphite-epoxy laminated skins are replaced by titanium plates, step-lap bonded to the adjoining laminates. Finally to accommodate electrical wiring for the wing tip antenna, a fiberglass conduit is enclosed within the core between the forward edge of the center section and the wing tip, where mounting holes for the tip antenna pod are provided.

#### FINITE ELEMENT MODELLING AND ANALYSIS

A diagram of the finite element model assembled for analysis using NASTRAN is shown in Figure 3. Triangular and quadrilateral orthotropic plate elements are used to represent the skins and core. The stiffness (bending and transverse shear) and mass properties of each element are derived from the local laminate construction, number of plies, core properties, and the airfoil thickness. The remaining structural elements - leading edge, conduit, channel section ribs and tip antenna pod - are represented by bar elements. In order to accurately simulate the mass distribution of the wing for the vibration analysis, additional lumped masses are placed along the leading edge and tip. A listing of the NASTRAN bulk data deck is reproduced in Appendix A.

For the static analysis, the test loads from reference (h) were distributed over the finite element model as concentrated forces applied to the grid points. To simulate the boundary condition for the critical load condition (5g symmetric pull-up), vertical displacements were constrained for the grid points located at the fuselage attachment bolts, and rotations about the longitudinal axis were constrained along the aircraft center line. The results of the static analysis, including the deflected shape, deflections at selected points, and reaction loads are shown in Figure 4 and Tables II and III. A complete listing of the NASTRAN output data is reproduced in Appendix B.

To provide vibration frequency and mode data for the modal flutter analysis described in reference (e), the real eigenvalue analysis option available in NASTRAN was used. Both symmetric and antisymmetric modes were computed by altering the constraints at the fuselage centerline. Similar frequencies, generalized masses and generalized stiffness resulted for the two cases. These data are listed in Table IV for the first five modes of each case. The mode shapes of the first three symmetric modes are shown in Figures 5, 6 and 7, and of the first three antisymmetric modes in Figures 8, 9 and 10. A complete listing of the NASTRAN output data for the symmetric modes is reproduced in Appendix C.

## STRESS ANALYSIS

To determine the ply stresses in the graphite-epoxy skins, element stresses computed by NASTRAN are first transformed into the local laminate coordinates. The stresses in laminate coordinates are shown for two streamwise sections in Figures 11 and 12. Laminate stiffness properties are used to calculate the resulting strains, which are subsequently transformed for each of the ply orientations of the local laminate construction. Unidirectional material stiffness coefficients are then used to compute the ply stresses. To account for the combined-stress state of the material in determining margins of safety, the interaction formula below is applied:

$$\left(\frac{\sigma_1}{X_1}\right)^2 + \left(\frac{\sigma_2}{X_2}\right)^2 + \left(\frac{\sigma_6}{X_6}\right)^2 - \frac{\sigma_1 \sigma_2}{X_1 X_2} = R_0^2$$

$$\left|\frac{\sigma_i}{X_i}\right| = R_i \quad \text{Ult. M.S.} = \frac{1}{1.25 \times R_{\max}} - 1.$$

$i = 1, 2, 6$

where  $\sigma_1, \sigma_2, \sigma_6$  are the inplane normal and shear stresses in the ply and  $X_i$  are the allowable stresses. The margin of safety of the element is the lowest of the margins for the individual ply orientations. The critical elements of the finite element model and the stresses and margins of safety resulting from the static analysis are listed in Table V.

Depending upon the ratio of the skin thickness to the section depth ( $0 \leq t/H \leq 0.5$ ) the core shear stress varies from 1.0 to 1.5 times the average shear stress (force/area), but may be conservatively approximated by the relation

$$\tau \leq \frac{1}{H} \left(1 + 1.15 \frac{t}{H}\right) \times \text{shear force per unit width}$$

To determine the core shear stresses and margins of safety, the element shear forces (per unit width) from NASTRAN and the skin thickness and section depth at the element centroid are used in the formula above. The resulting stresses are transformed into the ribbon and transverse directions of the core, and the strength criterion below is applied:

$$\frac{\tau_L}{X_L} + \left( \frac{\tau_W}{X_W} \right)^{1.575} = R''$$

$$\text{Ult. M. S.} = \frac{1}{1.25 \times R''} - 1.$$

where the subscripto L and W refer to the ribbon and transverse directions respectively. Shear stresses and margins of safety for the critical elements of the model are shown in Table VI.

The minimum ultimate margins of safety calculated for skins and core are 0.14 and 0.32 respectively. Therefore, the wing is considered safe for flight.

CONCLUSIONS

1. Based on the static aerodynamic loads prescribed, adequate margins of safety have been provided for the skins and core of the graphite-epoxy composite wing designed and fabricated for the BQM-34E target vehicle.
2. Static and dynamic aeroelastic (flutter) analyses, reviewed in reference (e), indicate that the stiffness and mass distribution of the composite wing are sufficient to avoid any instabilities throughout the flight envelope.

REFERENCES

- (a) Independent Research R011-01-01, Work Unit ME-9-02, Structural Research Program
- (b) AIRTASK No. A320000/001B/4F41422206, Work Unit HJ 202
- (c) Neu, T. F.: Graphite-Epoxy Composite Wing for BQM-34E; Design Criteria and Analysis. NAVAIRDEVCEN Report No. AM-7023, 21 October 1970.
- (d) Somoroff, A. R.: Graphite-Epoxy Composite Wing for BQM-34E; Flutter and Stress Analysis. NAVAIRDEVCEN Report No. AM-7024, 28 September 1970.
- (e) Somoroff, A. R. and Rubin, H.: NAVAIRDEVCEN Graphite-Epoxy Composite Wing for BQM-34E: Aeroelastic Analysis. NAVAIRDEVCEN Report No. 73233-30 of 12 November 1973.
- (f) Minecci, J. and Libeskind, M.: NAVAIRDEVCEN Graphite-Epoxy Composite Wing for BQM-34E: Static Test Results. NAVAIRDEVCEN Report No. 73244-30 of 3 December 1973.
- (g) Krzyzanowski, A. and Lambert, C. G.: Wing Structural Analysis Report for BQM-34E Supersonic Aerial Target. Ryan Aeronautical Company Report No. TRA 16642-12, 6 January 1971.
- (h) Thompson, R. W.: Static Test Program for XBQM-34E Supersonic Aerial Target. Ryan Aeroamutical Company Report No. TRA 16642-4, 2 January 1967.



TABLE I

(a) Composite Material and Laminate Properties

Laminate Construction*				Stiffness Coefficients psi x 10 <sup>6</sup>			
L	M	N	$\alpha$	$Q_{11}$	$Q_{12}$	$Q_{22}$	$Q_{66}$
1	0	0	-	22.12	0.386	1.21	0.60
1	0	4	45°	9.07	3.99	5.30	3.94
2	0	4	45°	10.93	3.39	4.65	3.70
4	0	6	45°	11.86	3.09	4.32	3.40
8	0	2	45°	17.43	1.29	2.34	1.60
2	0	4	22½°	16.88	1.89	1.70	2.20

\*L = No. of 0° plies; M = No. of 90° plies; N = No. of  $\pm\alpha$  plies.

Unidirectional material allowable ultimate stresses:

$$X_1 = 81.0 \text{ ksi} \quad X_2 = 3.6 \text{ ksi} \quad X_6 = 4.05 \text{ ksi}$$

based on average results of specimen tests reduced by 55%: 20% for statistical variation; 20% for possible required repair; and 15% for environmental degradation.

(b) Honeycomb Core Properties

Density, lb./ft. <sup>3</sup>	Shear Modulus, ksi		Shear Strength, psi	
	Long.	Transv.	Long.	Transv.
4.5	70	28	350	205
6.1	102	38	525	305
8.1	143	51	740	440

TABLE II

STATIC DEFLECTION AT SELECTED POINTS

<u>GRID PT.</u>	<u>DEFLECTION (IN.)</u>
1	0.01
6	0.87
10	5.13
11	-0.01
18	1.11
22	5.41
35	-0.05
42	1.64
46	5.98
59	-0.10
66	2.15
70	6.51
81	-0.03
85	1.91
90	7.16

TABLE III

(a) Attachment Bolt Loads

<u>Grid Pt.</u>	<u>Load (lb.)</u>
13	- 331.2
25	- 277.0
37	106.7
49	2163.5
61	<u>3204.7</u>
TOTAL	4866.7

(b) Centerline Bending Moment

<u>Grid Pt.</u>	<u>Moment (in.-lb.)</u>
11	4129.4
23	12770.5
35	25466.2
47	28630.0
59	14849.9
101	<u>18499.0</u>
TOTAL	104345.0

TABLE IV  
VIBRATION MODE DATA

	MODE NO.	FREQUENCY (HZ)	GENERALIZED MASS (lb.-in.-sec <sup>2</sup> )	GENERALIZED STIFFNESS (lb.-in.)
(a) Symmetric				
	1	20.2	.00476	76.5
	2	69.3	.00281	532.5
	3	85.6	.00250	724.7
	4	135.1	.00344	2479.2
	5	143.4	.00160	1298.8
(b) Antisymmetric				
	1	20.6	.00464	77.4
	2	71.5	.00266	535.7
	3	85.9	.00241	702.9
	4	138.6	.00381	2892.3
	5	144.7	.00206	1703.3

TABLE V

## LAMINATE STRESS DATA AT LIMIT LOAD

El. No.	Laminate Stresses, psi			Crit. Ply Orient.	Stresses in Critical Ply, psi			Ult. M.S.
	$\sigma_x$	$\sigma_y$	$\tau_{xy}$		$\sigma_1$	$\sigma_2$	$\sigma_6$	
52	22228	2290	-2906	0°	46826	-379	-513	.23
53	22614	2567	-4084	0°	47277	-311	-721	.22
54	22442	2098	-2967	0°	47604	-450	-524	.19
55	20732	1636	-3500	0°	44440	-511	-618	.23
56	20558	1264	-1974	0°	44615	-619	-348	.22
57	21406	3254	-5277	0°	49415	-267	-856	.17
73	23369	2933	-4899	0°	48424	-233	-865	.20
74	23681	2951	-3808	0°	49103	-243	-672	.21
75	23793	2669	-4762	0°	49789	-337	-841	.14
76	23329	2571	-3262	0°	48888	-345	-576	.19
77	22371	2105	-4044	0°	47433	-444	-714	.18
78	19743	2503	-2368	0°	46473	-397	-384	.25
79	21514	3554	-5030	0°	49154	-183	-816	.20

TABLE VI

## CORE SHEAR STRESS DATA AT LIMIT LOAD

El. No.	Core Density lb./ft. <sup>3</sup>	Shear Stresses, psi		Ult. M.S.
		Ribbon Dir.	Transverse	
51	4.5	83.	47.	1.40
52	4.5	102.	28.	1.38
68	6.1	99.	157.	0.49
69	8.1	284.	169.	0.32
70	6.1	164.	46.	1.20
73	4.5	110.	33.	1.16
74	4.5	113.	18.	1.33
75	4.5	111.	21.	1.33
92	6.1	167.	27.	1.35
700	6.1	173.	94.	0.65
900	8.1	206.	116.	0.99



AIRFOIL: NACA 65-003  
(MODIFIED) LINEAR TAPER  
FROM APPROX. 68C TO  
FINITE THICKNESS  
TRAILING EDGE

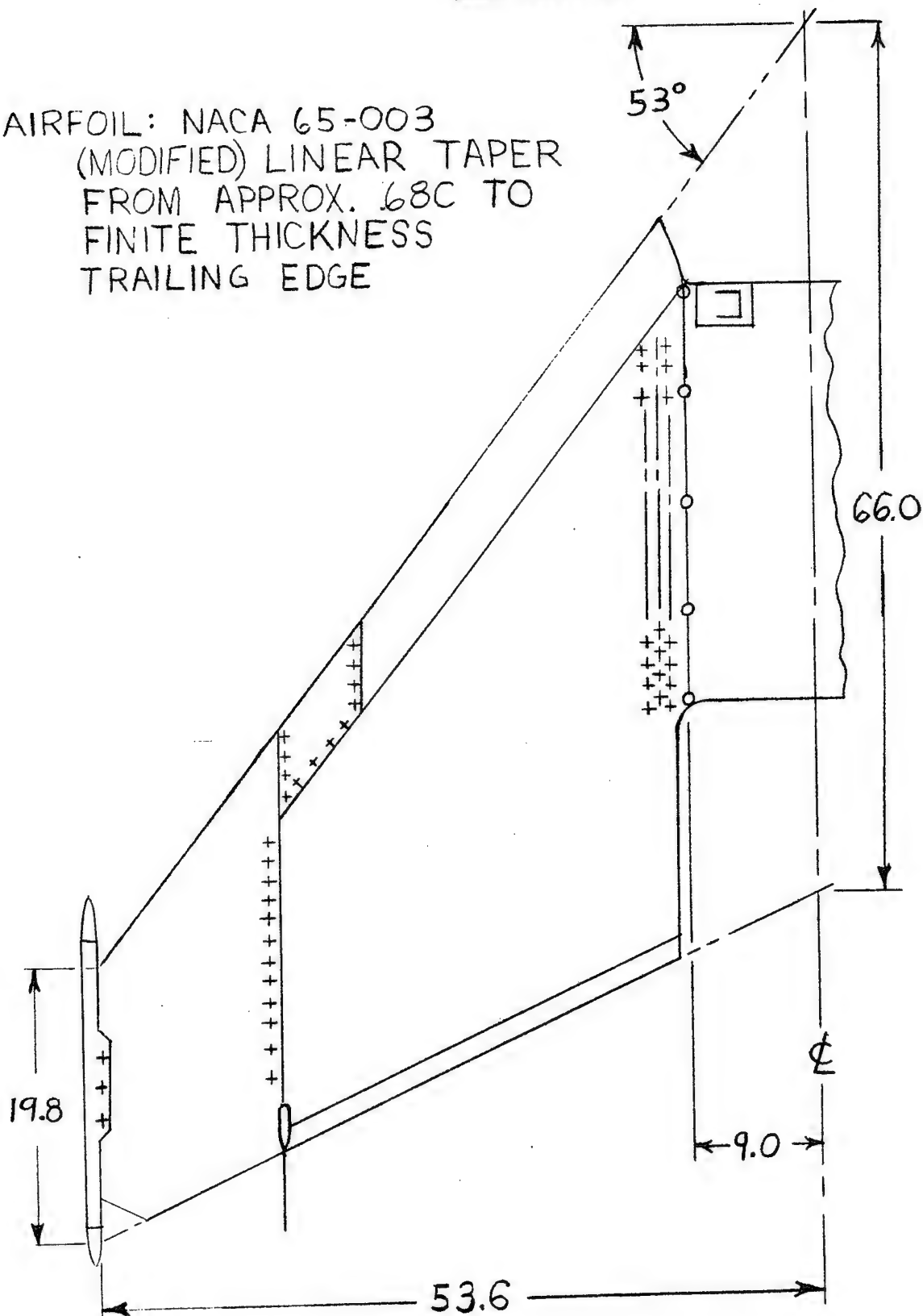


FIGURE 1. BQM-34E METAL WING PLANFORM

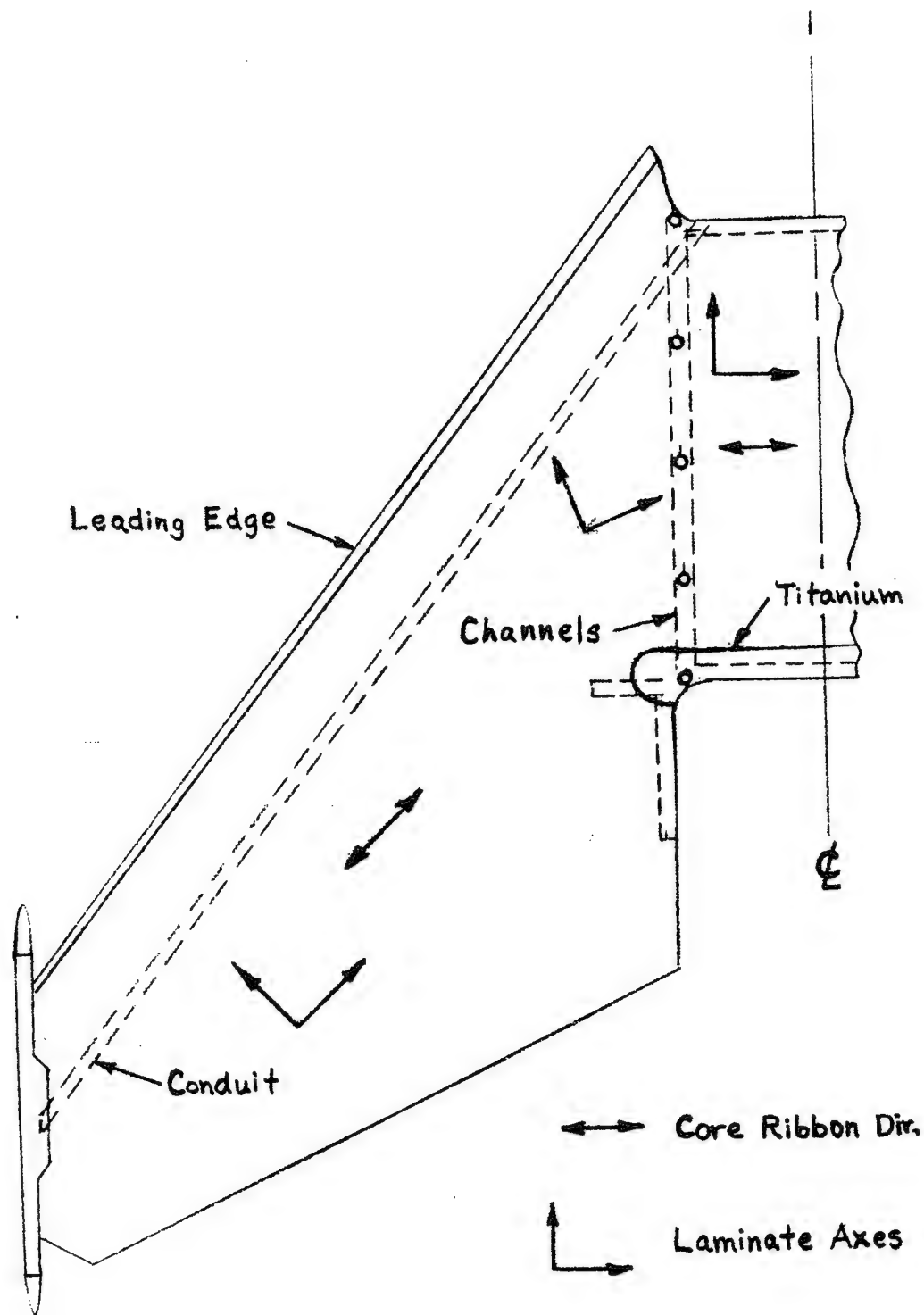


FIGURE 2. COMPOSITE WING CONSTRUCTION

16

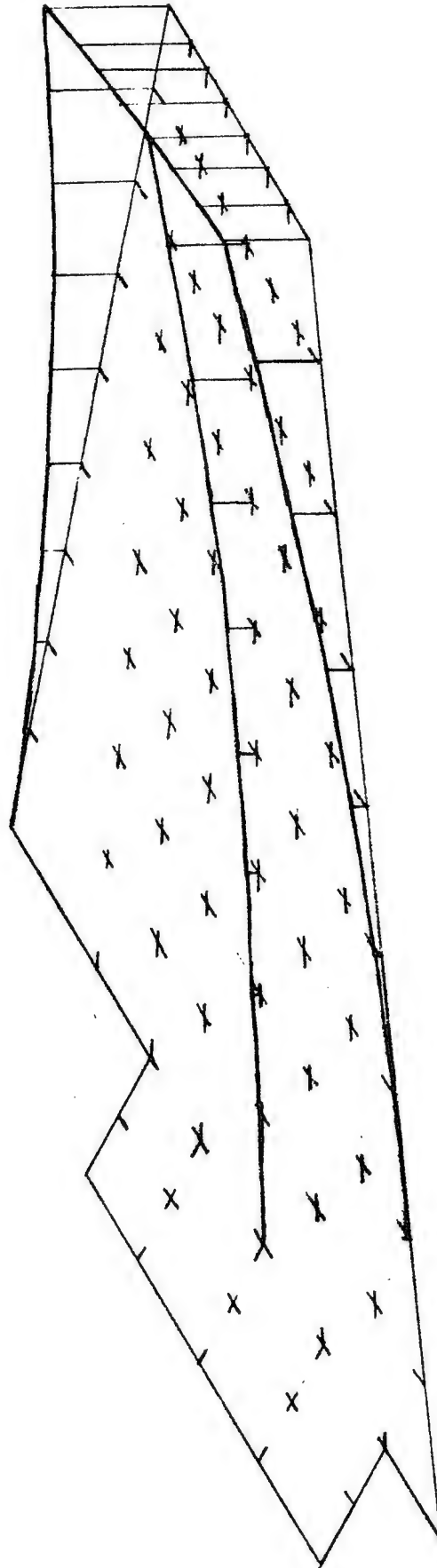


FIGURE 4. STATIC DEFLECTED SHAPE

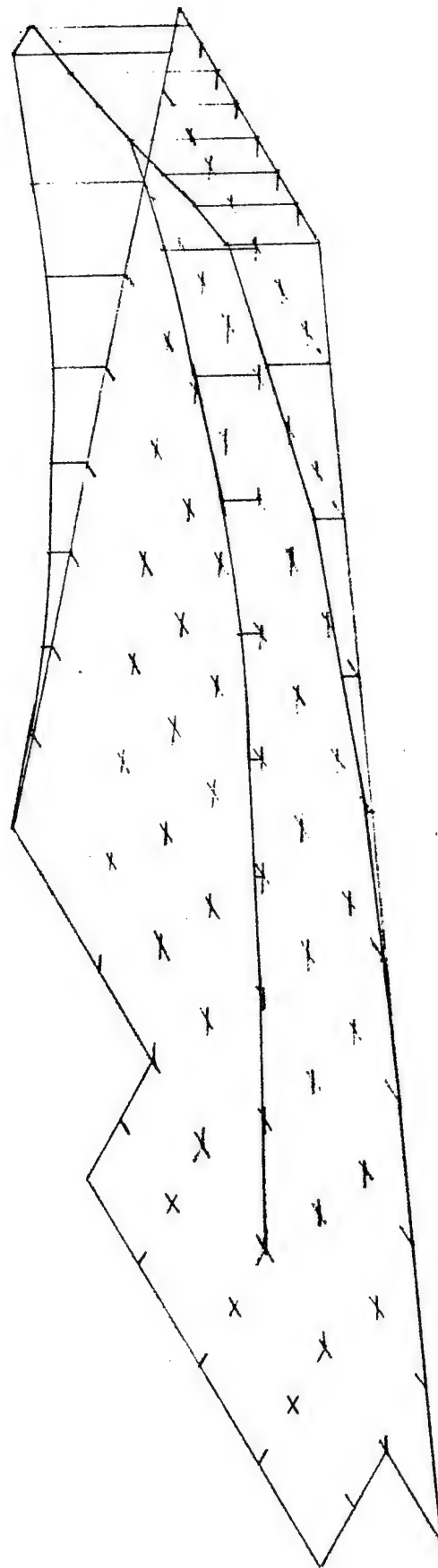


FIGURE 5. FIRST SYMMETRIC MODE, 20.2 HZ

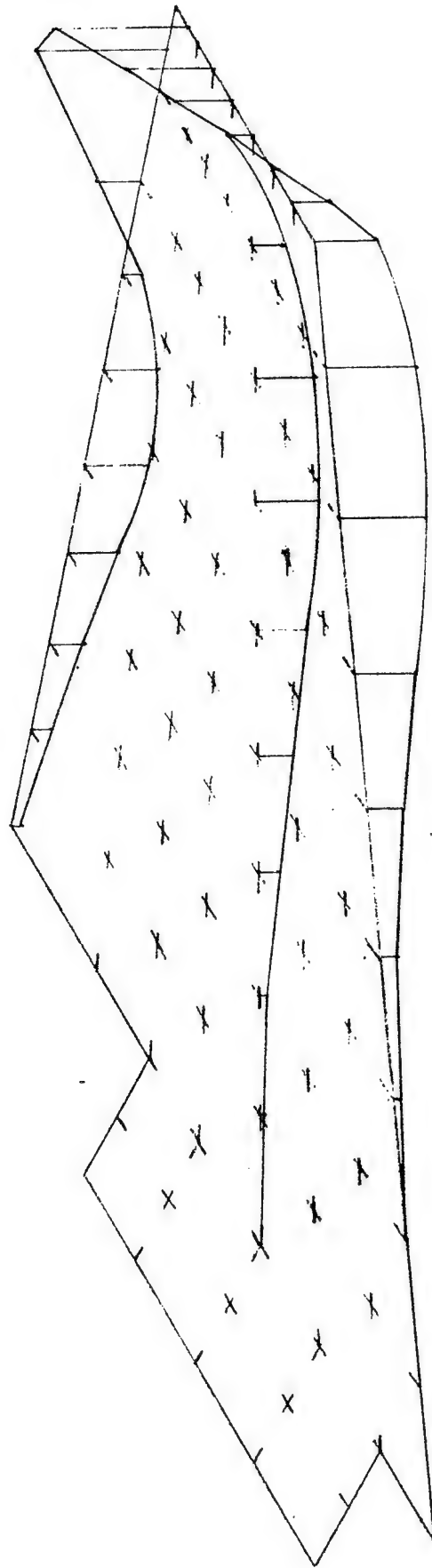


FIGURE 6. SECOND SYMMETRIC MODE, 69.3 HZ



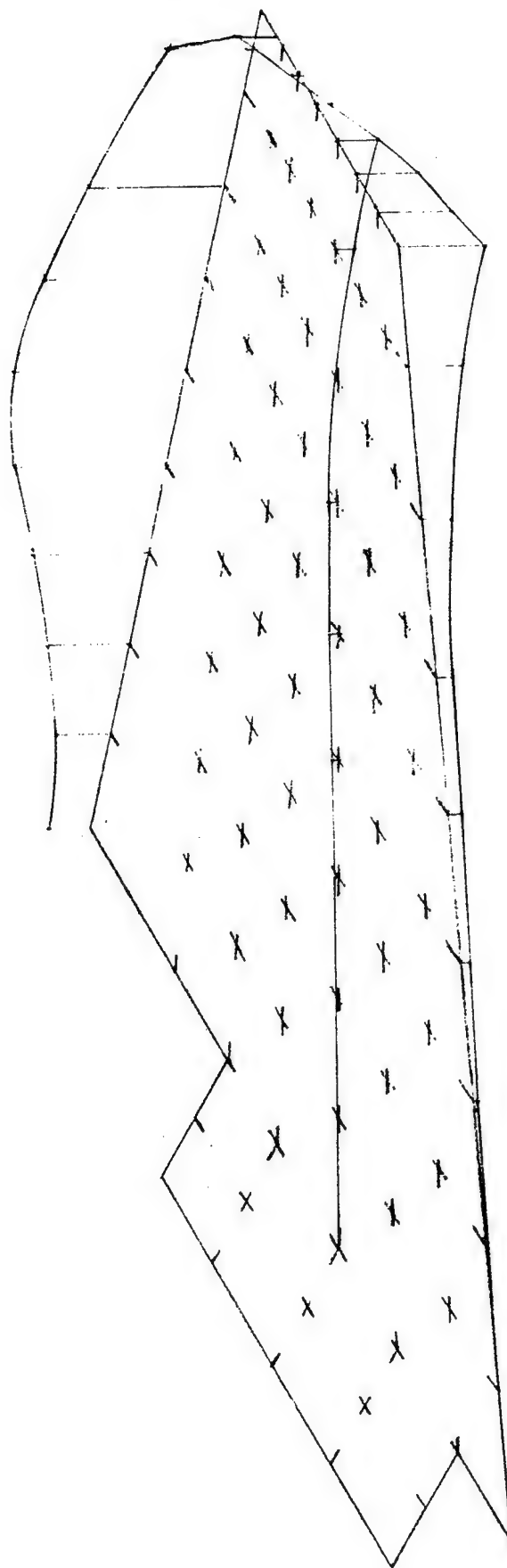


FIGURE 7. THIRD SYMMETRIC MODE, 85.6 HZ

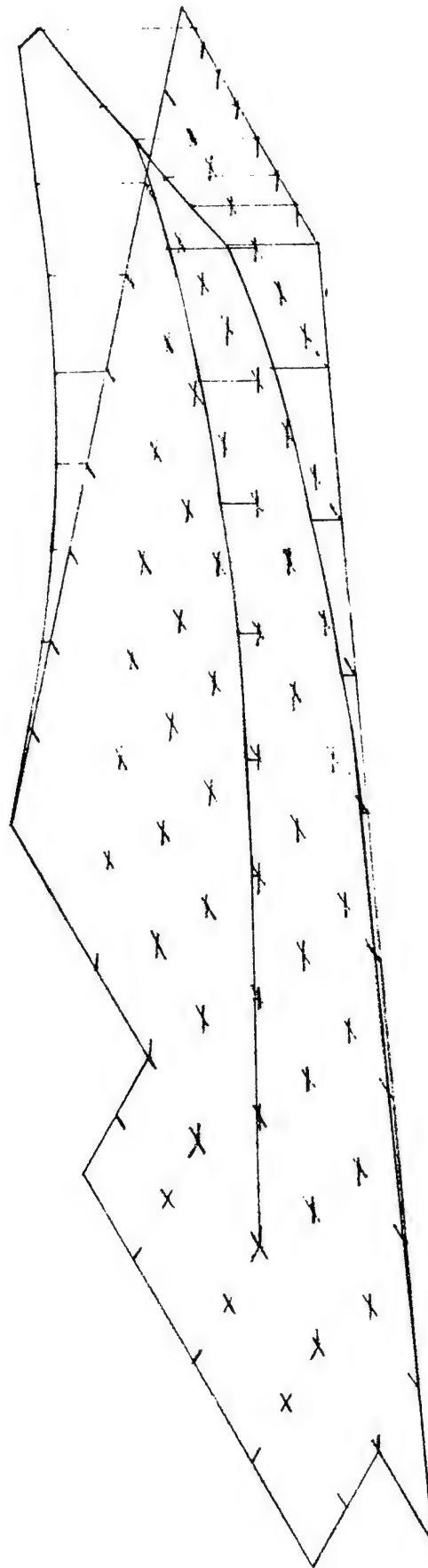


FIGURE 8. FIRST ANTISYMMETRIC MODE, 20.6 HZ

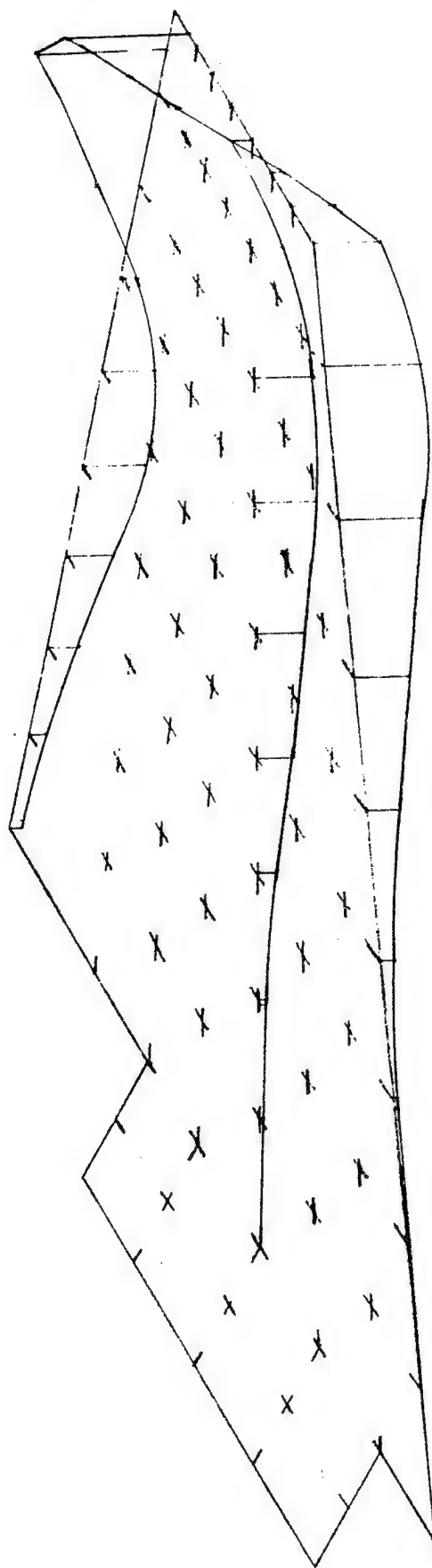


FIGURE 9. SECOND ANTISYMMETRIC MODE, 71.5 HZ

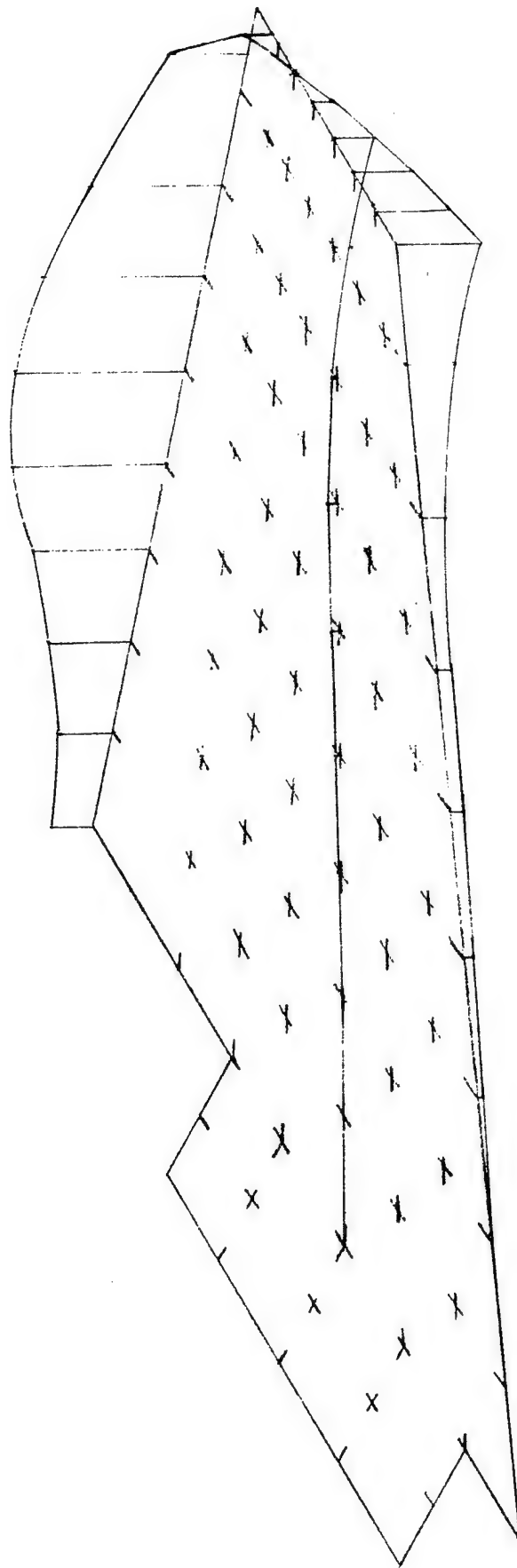
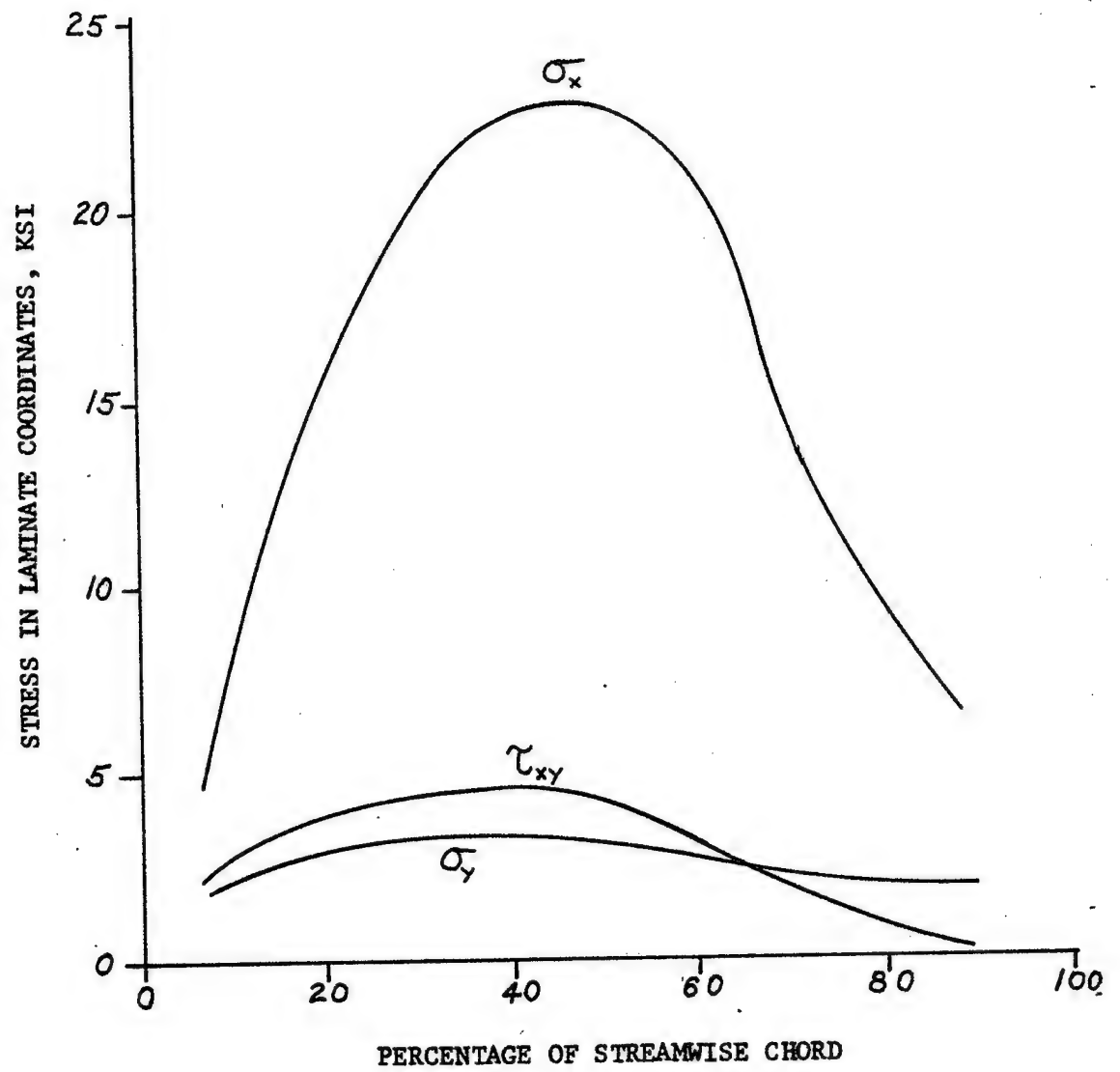
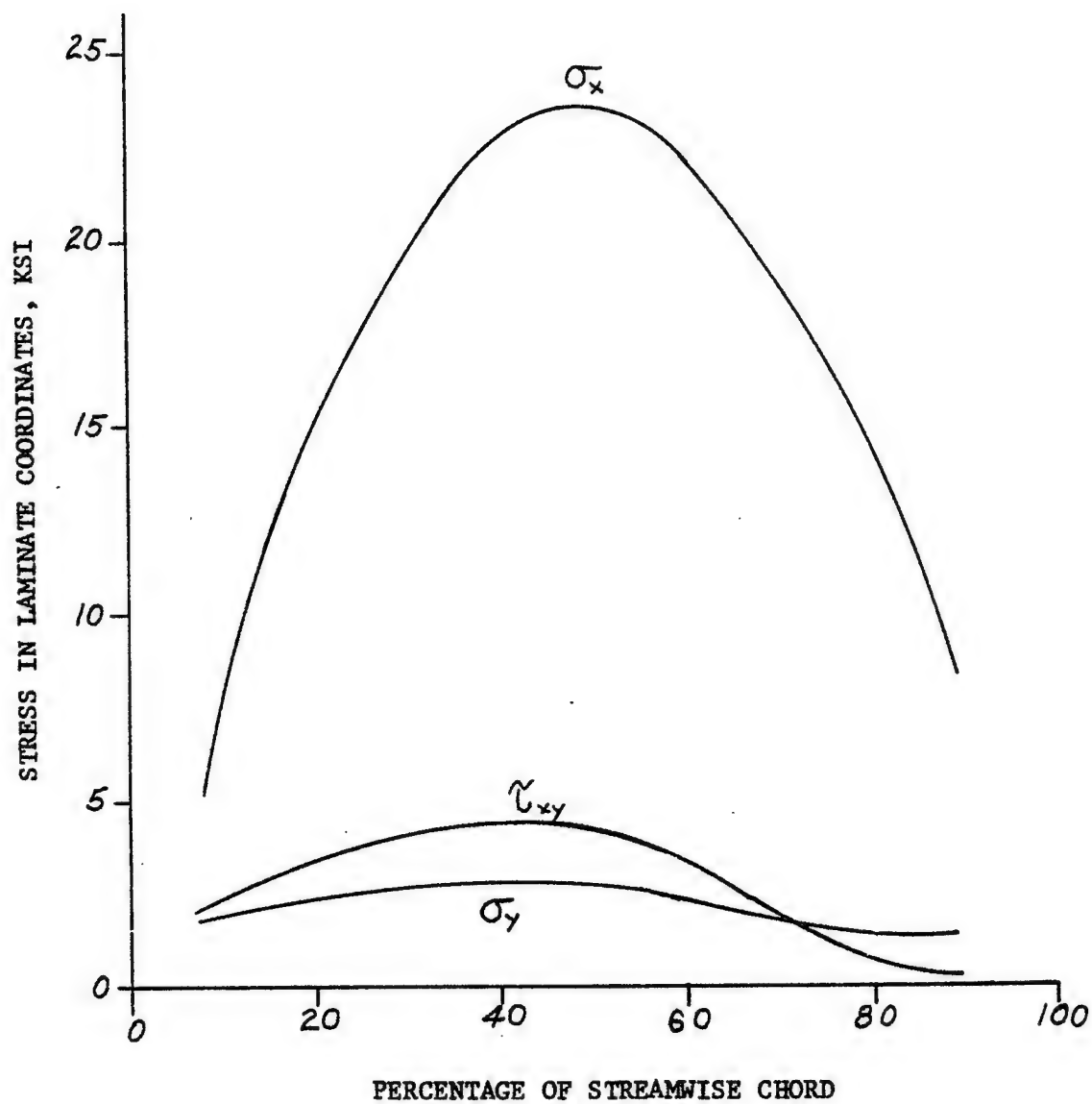


FIGURE 10. THIRD ANTISYMMETRIC MODE, 95.9 HZ

FIGURE 11. LAMINATE STRESSES AT  $y_w = 24$

FIGURE 12. LAMINATE STRESSES AT  $Y_W = 29$



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A P P E N D I X    A  
N A S T R A N   B U L K   D A T A   D E C K

## S O R T E D B U L K D A T A F O R M O

CAR	1	2	3	4	5	6	7	8	9	10
1- CBAR	201	201	59	60	0.0	0.0	0.0	1.0	1.0	BAR201
2- +AR201				0.	0.	0.	0.	0.	0.	
3- CBAR	202	202	60	61	0.0	0.0	0.0	1.0	1.0	BAR202
4- +AR202				0.	0.	0.	0.	0.	0.	
5- CBAR	203	203	61	104	0.0	0.0	0.0	1.0	1.0	BAR203
6- +AR203			2.25	0.	0.	2.25	0.	0.	0.	
7- CBAR	204	204	11	12	0.0	0.0	0.0	1.0	1.0	BAR204
8- +AR204				0.	0.	0.	0.	0.	0.	
9- CBAR	205	205	12	13	0.0	0.0	0.0	1.0	1.0	BAR205
10- +AR205				0.	0.	0.	0.	0.	0.	
11- CBAR	211	211	61	103	0.0	0.0	0.0	1.0	1.0	BAR211
12- +AR211				0.	0.	0.	0.	0.	0.	
13- CBAR	212	212	103	49	0.0	0.0	0.0	1.0	1.0	BAR212
14- +AR212				0.	0.	0.	0.	0.	0.	
15- CBAR	213	213	49	37	0.0	0.0	0.0	1.0	1.0	BAR213
16- +AR213				0.	0.	0.	0.	0.	0.	
17- CBAR	214	214	37	25	0.0	0.0	0.0	1.0	1.0	BAR214
18- +AR214				0.	0.	0.	0.	0.	0.	
19- CBAR	215	215	25	13	0.0	0.0	0.0	1.0	1.0	BAR215
20- +AR215				0.	0.	0.	0.	0.	0.	
21- CBAR	221	221	22	34	0.0	0.0	0.0	1.0	1.0	BAR221
22- +AR221				0.	0.	0.	0.	0.	0.	
23- CBAR	222	222	34	46	0.0	0.0	0.0	1.0	1.0	BAR222
24- +AR222				0.	0.	0.	0.	0.	0.	
25- CBAR	223	223	46	58	0.0	0.0	0.0	1.0	1.0	BAR223
26- +AR223				0.	0.	0.	0.	0.	0.	
27- CBAR	224	224	58	70	0.0	0.0	0.0	1.0	1.0	BAR224
28- +AR224				0.	0.	0.	0.	0.	0.	
29- CBAR	231	231	111	112	0.0	0.0	0.0	1.0	1.0	BAR231
30- +AR231				0.	0.	0.	0.	0.	0.	
31- CBAR	232	232	112	58	0.0	0.0	0.0	1.0	1.0	BAR232
32- +AR232				0.	0.	0.	0.	0.	0.	
33- CBAR	233	233	58	46	0.0	0.0	0.0	1.0	1.0	BAR233
34- +AR233				0.	0.	0.	0.	0.	0.	
35- CBAR	234	234	46	34	0.0	0.0	0.0	1.0	1.0	BAR234
36- +AR234				0.	0.	0.	0.	0.	0.	
37- CBAR	235	235	34	113	0.0	0.0	0.0	1.0	1.0	BAR235
38- +AR235				0.	0.	0.	0.	0.	0.	
39- CBAR	236	236	113	114	0.0	0.0	0.0	1.0	1.0	BAR236
40- +AR236				0.	0.	0.	0.	0.	0.	
41- CBAR	241	241	1	2	0.0	0.0	0.0	1.0	1.0	BAR241
42- +AR241				0.	0.	0.	0.	0.	0.	
43- CBAR	242	242	2	3	0.0	0.0	0.0	1.0	1.0	BAR242
44- +AR242				0.	0.	0.	0.	0.	0.	
45- CBAR	243	243	3	4	0.0	0.0	0.0	1.0	1.0	BAR243
46- +AR243				0.	0.	0.	0.	0.	0.	
47- CBAR	244	244	4	5	0.0	0.0	0.0	1.0	1.0	BAR244
48- +AR244				0.	0.	0.	0.	0.	0.	
49- CBAR	245	245	5	6	0.0	0.0	0.0	1.0	1.0	BAR245
50- +AR245				0.	0.	0.	0.	0.	0.	



NADC-73235-30

S-O-R-T-E-D BULK DATA ECHO										
CAR	1	2	3	4	5	6	7	8	9	10
POINT	1	2	3	4	5	6	7	8	9	10
101-	CIRPLT 16	16	16	9	21	20	0.0	0.0	0.0	0.0
102-	CIRPLT 17	17	17	21	9	10	0.0	0.0	0.0	0.0
103-	CIRPLT 18	18	18	10	22	21	0.0	0.0	0.0	0.0
104-	CIRPLT 23	23	23	25	13	14	0.0	0.0	0.0	0.0
105-	CIRPLT 24	24	24	14	26	25	0.0	0.0	0.0	0.0
106-	CIRPLT 25	25	25	26	14	15	0.0	0.0	0.0	0.0
107-	CIRPLT 26	26	26	15	27	26	0.0	0.0	0.0	0.0
108-	CIRPLT 27	27	27	15	15	15	0.0	0.0	0.0	0.0
109-	CIRPLT 28	28	28	16	28	27	0.0	0.0	0.0	0.0
110-	CIRPLT 29	29	29	28	16	17	0.0	0.0	0.0	0.0
111-	CIRPLT 30	30	30	17	29	28	0.0	0.0	0.0	0.0
112-	CIRPLT 31	31	31	29	17	18	0.0	0.0	0.0	0.0
113-	CIRPLT 32	32	32	18	30	29	0.0	0.0	0.0	0.0
114-	CIRPLT 33	33	33	30	18	19	0.0	0.0	0.0	0.0
115-	CIRPLT 34	34	34	19	31	30	0.0	0.0	0.0	0.0
116-	CIRPLT 35	35	35	31	19	20	0.0	0.0	0.0	0.0
117-	CIRPLT 36	36	36	20	32	31	0.0	0.0	0.0	0.0
118-	CIRPLT 37	37	37	32	20	21	0.0	0.0	0.0	0.0
119-	CIRPLT 38	38	38	21	33	32	0.0	0.0	0.0	0.0
120-	CIRPLT 39	39	39	33	21	22	0.0	0.0	0.0	0.0
121-	CIRPLT 40	40	40	22	34	33	0.0	0.0	0.0	0.0
122-	CIRPLT 45	45	45	37	25	26	0.0	0.0	0.0	0.0
123-	CIRPLT 46	46	46	26	38	37	0.0	0.0	0.0	0.0
124-	CIRPLT 47	47	47	38	26	27	0.0	0.0	0.0	0.0
125-	CIRPLT 48	48	48	27	39	38	0.0	0.0	0.0	0.0
126-	CIRPLT 49	49	49	39	27	28	0.0	0.0	0.0	0.0
127-	CIRPLT 50	50	50	28	40	39	0.0	0.0	0.0	0.0
128-	CIRPLT 51	51	51	40	28	29	0.0	0.0	0.0	0.0
129-	CIRPLT 52	52	52	29	41	40	0.0	0.0	0.0	0.0
130-	CIRPLT 53	53	53	41	30	30	0.0	0.0	0.0	0.0
131-	CIRPLT 54	54	54	30	42	41	0.0	0.0	0.0	0.0
132-	CIRPLT 55	55	55	42	30	31	0.0	0.0	0.0	0.0
133-	CIRPLT 56	56	56	41	43	42	0.0	0.0	0.0	0.0
134-	CIRPLT 57	57	57	43	31	32	0.0	0.0	0.0	0.0
135-	CIRPLT 58	58	58	32	44	43	0.0	0.0	0.0	0.0
136-	CIRPLT 59	59	59	44	32	33	0.0	0.0	0.0	0.0
137-	CIRPLT 60	60	60	33	45	44	0.0	0.0	0.0	0.0
138-	CIRPLT 61	61	61	45	33	34	0.0	0.0	0.0	0.0
139-	CIRPLT 62	62	62	34	46	45	0.0	0.0	0.0	0.0
140-	CIRPLT 67	67	67	49	37	38	0.0	0.0	0.0	0.0
141-	CIRPLT 68	68	68	78	50	49	-12.885	0.0	0.0	0.0
142-	CIRPLT 69	69	69	78	105	50	12.448	0.0	0.0	0.0
143-	CIRPLT 70	70	70	106	105	51	0.0	0.0	0.0	0.0
144-	CIRPLT 71	71	71	51	39	40	0.0	0.0	0.0	0.0
145-	CIRPLT 72	72	72	40	52	51	0.0	0.0	0.0	0.0
146-	CIRPLT 73	73	73	52	40	41	0.0	0.0	0.0	0.0
147-	CIRPLT 74	74	74	41	53	52	0.0	0.0	0.0	0.0
148-	CIRPLT 75	75	75	53	41	42	0.0	0.0	0.0	0.0
149-	CIRPLT 76	76	76	42	54	53	0.0	0.0	0.0	0.0
150-	CIRPLT 77	77	77	54	42	43	0.0	0.0	0.0	0.0

S-O-R-T-E-D R-U-L-K-D-A-T-A-F-C-H-O

CARD COUNT	1	2	3	4	5	6	7	8	9	10
151-	CIRPLT 78	78	43	55	54	0.0	0.0	0.0	0.0	0.0
152-	CIRPLT 79	79	55	43	44	0.0	0.0	0.0	0.0	0.0
153-	CIRPLT 80	80	44	56	55	0.0	0.0	0.0	0.0	0.0
154-	CIRPLT 81	81	56	44	45	0.0	0.0	0.0	0.0	0.0
155-	CIRPLT 82	82	45	57	56	0.0	0.0	0.0	0.0	0.0
156-	CIRPLT 83	83	57	45	46	0.0	0.0	0.0	0.0	0.0
157-	CIRPLT 84	84	46	58	57	0.0	0.0	0.0	0.0	0.0
158-	CIRPLT 89	89	103	49	50	0.0	0.0	0.0	0.0	0.0
159-	CIRPLT 90	90	50	62	61	0.0	0.0	0.0	0.0	0.0
160-	CIRPLT 91	91	105	106	50	0.0	0.0	0.0	0.0	0.0
161-	CIRPLT 92	92	107	106	51	0.0	0.0	0.0	0.0	0.0
162-	CIRPLT 93	93	63	51	52	0.0	0.0	0.0	0.0	0.0
163-	CIRPLT 94	94	52	64	63	0.0	0.0	0.0	0.0	0.0
164-	CIRPLT 95	95	64	52	53	0.0	0.0	0.0	0.0	0.0
165-	CIRPLT 96	96	53	65	64	0.0	0.0	0.0	0.0	0.0
166-	CIRPLT 97	97	65	53	54	0.0	0.0	0.0	0.0	0.0
167-	CIRPLT 98	98	54	66	65	0.0	0.0	0.0	0.0	0.0
168-	CIRPLT 99	99	66	54	55	0.0	0.0	0.0	0.0	0.0
169-	CIRPLT 100	100	55	67	66	0.0	0.0	0.0	0.0	0.0
170-	CIRPLT 101	101	67	55	56	0.0	0.0	0.0	0.0	0.0
171-	CIRPLT 102	102	56	69	67	0.0	0.0	0.0	0.0	0.0
172-	CIRPLT 103	103	68	56	57	0.0	0.0	0.0	0.0	0.0
173-	CIRPLT 104	104	57	69	68	0.0	0.0	0.0	0.0	0.0
174-	CIRPLT 105	105	69	57	59	0.0	0.0	0.0	0.0	0.0
175-	CIRPLT 106	106	58	70	69	0.0	0.0	0.0	0.0	0.0
176-	CIRPLT 107	107	104	61	62	0.0	0.0	0.0	0.0	0.0
177-	CIRPLT 108	108	62	72	71	13.657	13.657	13.657	13.657	13.657
178-	CIRPLT 109	109	107	72	72	-14.990	-14.990	-14.990	-14.990	-14.990
179-	CIRPLT 110	110	63	73	72	0.0	0.0	0.0	0.0	0.0
180-	CIRPLT 111	111	73	63	64	0.0	0.0	0.0	0.0	0.0
181-	CIRPLT 112	112	64	74	73	0.0	0.0	0.0	0.0	0.0
182-	CIRPLT 113	113	74	64	65	0.0	0.0	0.0	0.0	0.0
183-	CIRPLT 114	114	65	75	74	0.0	0.0	0.0	0.0	0.0
184-	CIRPLT 115	115	75	65	66	0.0	0.0	0.0	0.0	0.0
185-	CIRPLT 116	116	56	76	75	0.0	0.0	0.0	0.0	0.0
186-	CIRPLT 117	117	75	66	67	0.0	0.0	0.0	0.0	0.0
187-	CIRPLT 118	118	67	77	76	0.0	0.0	0.0	0.0	0.0
188-	CIRPLT 119	119	77	67	68	0.0	0.0	0.0	0.0	0.0
189-	CIRPLT 120	120	68	78	77	0.0	0.0	0.0	0.0	0.0
190-	CIRPLT 121	121	78	68	69	0.0	0.0	0.0	0.0	0.0
191-	CIRPLT 122	122	69	79	78	0.0	0.0	0.0	0.0	0.0
192-	CIRPLT 123	123	79	69	70	0.0	0.0	0.0	0.0	0.0
193-	CIRPLT 124	124	70	80	79	0.0	0.0	0.0	0.0	0.0
194-	CIRPLT 125	125	81	71	72	0.0	0.0	0.0	0.0	0.0
195-	CIRPLT 126	126	72	82	81	0.0	0.0	0.0	0.0	0.0
196-	CIRPLT 127	127	82	72	73	0.0	0.0	0.0	0.0	0.0
197-	CIRPLT 128	128	73	83	82	0.0	0.0	0.0	0.0	0.0
198-	CIRPLT 129	129	83	73	74	0.0	0.0	0.0	0.0	0.0
199-	CIRPLT 130	130	74	84	83	0.0	0.0	0.0	0.0	0.0
200-	CIRPLT 131	131	84	74	75	0.0	0.0	0.0	0.0	0.0

## FINAL VIBRATION MODES ANALYSIS

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## SORTED BULK DATA FCHN

CAPO POINT	1	2	3	4	5	6	7	8	9	10
201- CTRPLT 132	132	132	75	85	84	0.0	0.0	0.0	0.0	0.0
202- CTRPLT 133	133	133	85	75	76	0.0	0.0	0.0	0.0	0.0
203- CTRPLT 134	134	134	76	86	85	0.0	0.0	0.0	0.0	0.0
204- CTRPLT 135	135	135	86	76	77	0.0	0.0	0.0	0.0	0.0
205- CTRPLT 136	136	136	77	87	86	0.0	0.0	0.0	0.0	0.0
206- CTRPLT 137	137	137	87	77	78	0.0	0.0	0.0	0.0	0.0
207- CTRPLT 138	138	138	78	88	87	0.0	0.0	0.0	0.0	0.0
208- CTRPLT 139	139	139	88	78	79	0.0	0.0	0.0	0.0	0.0
209- CTRPLT 140	140	140	79	89	88	0.0	0.0	0.0	0.0	0.0
210- CTRPLT 141	141	141	89	79	80	0.0	0.0	0.0	0.0	0.0
211- CTRPLT 600	600	600	105	78	39	12.448	0.0	0.0	0.0	0.0
212- CTRPLT 700	700	700	30	51	105	0.0	0.0	0.0	0.0	0.0
213- CTRPLT 800	800	800	61	103	50	0.0	0.0	0.0	0.0	0.0
214- CTRPLT 900	900	900	62	50	106	0.0	0.0	0.0	0.0	0.0
215- CTRPLT 910	910	910	106	107	62	0.0	0.0	0.0	0.0	0.0
216- CTRPLT 920	920	920	51	63	107	0.0	0.0	0.0	0.0	0.0
217- CTRPLT 1070	1070	1070	71	104	62	0.0	0.0	0.0	0.0	0.0
218- CTRPLT 1090	1090	1090	72	107	63	-14.900	0.0	0.0	0.0	0.0
219- EIGR 4	GIV	GIV	0.0	275.		8	1	126		
220- +ONES4	MAX	1								
221- GMSFT	1									
222- GIN 1			-17.1790	-17.10890.0						
223- GIN 2			-8.9523	-15.97250.0						
224- GIN 3			-0.7257	-14.83610.0						
225- GIN 4			7.5009	-13.69060.0						
226- GIN 5			15.7275	-12.56320.0						
227- GIN 6			23.9542	-11.42690.0						
228- GIN 7			32.1809	-10.29040.0						
229- GIN 8			40.4075	-9.1540 0.0						
230- GIN 9			48.6361	-8.0175 0.0						
231- GIN 10			56.2026	-6.9721 0.0						
232- GIN 11			-18.2241	-5.4478 0.0					126	
233- GIN 12			-15.0486	-4.6363 0.0					0	126
234- GIN 13			-11.8732	-11.8247 0.0					0	126
235- GIN 14			-4.0391	-11.07010.0						
236- GIN 15			3.7049	-10.3390.0						
237- GIN 16			11.6289	-9.5885 0.0						
238- GIN 17			19.4630	-8.8431 0.0						
239- GIN 18			27.2070	-8.0977 0.0						
240- GIN 19			35.1310	-7.3523 0.0						
241- GIN 20			42.9650	-6.6060 0.0						
242- GIN 21			50.7991	-5.8614 0.0						
243- GIN 22			58.6064	-5.1757 0.0						
244- GIN 23			-12.3147	4.375 0.0					126	
245- GIN 24			-9.1393	-2.7510 0.0					0	126
246- GIN 25			-5.9633	-5.9305 0.0					0	126
247- GIN 26			1.4330	-5.6295 0.0						
248- GIN 27			4.8207	-5.3196 0.0						
249- GIN 28			16.2255	-5.0097 0.0						
250- GIN 29			23.6238	-4.6908 0.0						

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S-O-R-T-E-D R-U-L-K D-A-T-A F-O-U-N										
CARD	1	2	3	4	5	6	7	8	9	10
COUNT	GRID									
251-	GRID 30			31.0200	-4.3898	0.0				
252-	GRID 31			38.4168	-4.0799	0.0				
253-	GRID 32			45.8135	-3.7700	0.0				
254-	GRID 33			53.2103	-3.4601	0.0				
255-	GRID 34			60.0153	-3.1740	0.0				
256-	GRID 35			-6.4479	6.2804	0.0	0		126	
257-	GRID 36			-3.2725	7.0319	0.0	0		126	
258-	GRID 37			-0.0970	-0.0965	0.0	0		126	
259-	GRID 38			6.8656	-0.2190	0.0				
260-	GRID 39			13.8283	-0.3414	0.0				
261-	GRID 40			20.7909	-0.4630	0.0				
262-	GRID 41			27.7536	-0.5863	0.0				
263-	GRID 42			34.7162	-0.7087	0.0				
264-	GRID 43			41.6789	-0.8311	0.0				
265-	GRID 44			48.6415	-0.9536	0.0				
266-	GRID 45			55.6042	-1.0760	0.0				
267-	GRID 46			62.0008	-1.1885	0.0				
268-	GRID 47			-0.5813	12.1230	0.0	0		126	
269-	GRID 48			2.5942	8.9348	0.0	0		126	
270-	GRID 49			5.7696	5.7461	0.0	0		126	
271-	GRID 50	0		12.0	49.7	0.0				
272-	GRID 51			18.8267	4.6366	0.0				
273-	GRID 52			25.3553	4.0918	0.0				
274-	GRID 53			31.8838	3.5271	0.0				
275-	GRID 54			38.4123	2.9723	0.0				
276-	GRID 55			44.9409	2.4175	0.0				
277-	GRID 56			51.4694	1.8628	0.0				
278-	GRID 57			57.9979	1.3080	0.0				
279-	GRID 58			64.0042	0.7977	0.0				
280-	GRID 59			4.3150	15.9993	0.0	0		126	
281-	GRID 60			7.4904	13.8109	0.0	0		126	
282-	GRID 61			10.6659	10.6224	0.0	0		126	
283-	GRID 62	0		12.0	53.5	0.0				
284-	GRID 63			22.9984	8.7912	0.0				
285-	GRID 64			29.1645	7.8755	0.0				
286-	GRID 65			35.3308	6.9501	0.0				
287-	GRID 66			41.4971	6.0445	0.0				
288-	GRID 67			47.6633	5.1289	0.0				
289-	GRID 68			53.8295	4.2173	0.0				
290-	GRID 69			59.9958	3.2977	0.0				
291-	GRID 70			65.6687	2.4554	0.0				
292-	GRID 71	0		11.25	58.53	0.0				
293-	GRID 72			21.5808	14.4361	0.0	0		126	
294-	GRID 73			27.3676	13.1426	0.0				
295-	GRID 74			33.1543	11.8491	0.0				
296-	GRID 75			38.9411	10.5556	0.0				
297-	GRID 76			44.7279	9.2621	0.0				
298-	GRID 77			50.5147	7.9685	0.0				
299-	GRID 78			56.3014	6.6751	0.0				
300-	GRID 79			62.0008	5.3816	0.0				

## SORTED RULK DATA FCH-0

CARD	1	2	3	4	5	6	7	8	9	10
COUNT										
301-	GOIN	80	0	53.6	88.0496	0				
302-	GOIN	81	0	11.25	71.23219	0				
303-	GOIN	82		29.2236	22.0477	0.0				
304-	GOIN	83		34.3997	20.1460	0.0				
305-	GOIN	84		79.5757	18.2443	0.0				
306-	GOIN	85		44.7518	16.7425	0.0				
307-	GOIN	86		49.9278	14.4408	0.0				
308-	GOIN	87		55.1039	12.5391	0.0				
309-	GOIN	88		60.2799	10.6373	0.0				
310-	GOIN	89	0	50.835	89.6461	0.0	0	126		
311-	GOIN	101	0	0.0	48.3	0.0				
312-	GOIN	102	0	4.5	48.3	0.0				
313-	GOIN	103	0	9.0	48.3	0.0				
314-	GOIN	104	0	9.0	54.3	0.0	0	126		
315-	GOIN	105	0	15.5	47.75	0.0				
316-	GOIN	106	0	15.5	52.0	0.0	0	126		
317-	GOIN	107	0	15.5	56.15	0.0				
318-	GOIN	111	0	53.6	90.55	0.0				
319-	GOIN	112	0	53.6	86.05	0.0				
320-	GOIN	113	0	53.6	72.95	0.0				
321-	GOIN	114	0	53.6	67.55	0.0				
322-	MAT1	2	3.0+4	7.0+4						
323-	HEAD									
324-	MAT1	10	16.0+6	6.2+6						
325-	MAT1	11	10.5+6	.33	.253-3					
326-	MAT1	12	2.5+6	5.166+6	.14245-3					
327-	MAT1	13	2.6+6	1.3+6	.168-3					
328-	MAT1	15	5.0+6	2.0+6	.14245-3					
329-	MAT2	1	9.2875+6	1.4915+6	-1.571+6	0.2875+6	-1.571+6	19.05+6		
330-	MAT2	3	8.9892+6	1.902+6	-1.886+6	0.9882+6	-1.886+6	1.886+6	4.992+6	
331-	MAT2	4	2.344+6	1.291+6	0.0	1.743+7	0.0	1.6+6		
332-	MAT2	6	9.5272+6	1.6512+6	-0.427+6	0.5272+6	-0.427+6	1.5992+6		
333-	MAT2	7	3.1732+6	2.6401+5	-2.446+5	1.3303+7	-3.432+5	2.9491+6		
334-	OMIT1	3	15	17	10	21	26	28	30	30
335-	OROP7	32	39	41	43	45	52	54	56	56
336-	OROP71	63	65	67	69	72	74	76	78	78
337-	OROP72	103	105							
338-	OMIT1	4	11	23	35	47	59	101		
339-	OMIT1	45	1	THRU	10					
340-	OMIT1	45	12	THRU	22					
341-	OMIT1	45	24	THRU	34					
342-	OMIT1	45	36	THRU	46					
343-	OMIT1	45	48	THRU	58					
344-	OMIT1	45	60	THRU	89					
345-	OMIT1	45	102	THRU	107					
346-	OMIT1	45	111	THRU	114					
347-	OROP7	37								
348-	OROP71	201	12	.1388	1.3131	1.67	.6075-4	0.0		
349-	OROP72	103	105	.68	0.0	.67	.67	.67		
350-	OROP71	4128	1.	0.0						



## FINAL VIBRATION MODES ANALYSIS

## S O R T E D B U L K O U T P U T

CARD	1	2	3	4	5	6	7	8	9	10
COUNT										
351-	PRAP	202	12	1304	1.1671	1.	.695F-4	0.0	0.	PRAR202
352-	PRAP	202	0.	-.67	0.	.67	0.	-.67	0.	PRAR202A
353-	PRAP	202A	1.	0.	0.	0.	0.	0.	0.	PRAR203
354-	PRAP	203	12	1308	1.3131	1.	.697F-4	0.0	0.	PRAR203A
355-	PRAP	203	0.	-.67	0.	.68	0.	-.68	0.	PRAR204
356-	PRAP	203A	1.	0.	0.	0.	0.	0.	0.	PRAR204A
357-	PRAP	204	12	1324	-.9839	1.	.7061-4	0.0	0.	PRAR205
358-	PRAP	204	0.	-.70	0.	.69	0.	-.69	0.	PRAR205A
359-	PRAP	204A	1.	0.	0.	0.	0.	0.	0.	PRAR211
360-	PRAP	205	12	1316	1.0587	1.	.7019-4	0.0	0.	PRAR211A
361-	PRAP	205	0.	-.69	0.	.68	0.	-.68	0.	PRAR212
362-	PRAP	205A	1.	0.	0.	0.	0.	0.	0.	PRAR212A
363-	PRAP	211	12	2910	1.2357	1.	.7012-3	0.0	0.	PRAR213
364-	PRAP	211	0.	-.67	0.	.67	0.	-.67	0.	PRAR213A
365-	PRAP	211A	1.	0.	0.	0.	0.	0.	0.	PRAR214
366-	PRAP	212	12	2925	2.9059	1.	.6987-3	0.0	0.	PRAR214A
367-	PRAP	212	0.	-.67	0.	.655	0.	-.655	0.	PRAR215
368-	PRAP	212A	1.	0.	0.	0.	0.	0.	0.	PRAR215A
369-	PRAP	213	12	28955	2.9607	1.	.5962-3	0.0	0.	PRAR221
370-	PRAP	213	0.	-.655	0.	.655	0.	-.655	0.	PRAR221A
371-	PRAP	213A	1.	0.	0.	0.	0.	0.	0.	PRAR221A
372-	PRAP	214	12	22145	2.6377	1.	.3184-3	0.0	0.	PRAR221A
373-	PRAP	214	0.	-.655	0.	.68	0.	-.68	0.	PRAR221A
374-	PRAP	214A	1.	0.	0.	0.	0.	0.	0.	PRAR221A
375-	PRAP	215	12	22245	2.5345	1.	.3205-3	0.0	0.	PRAR221A
376-	PRAP	215	0.	-.68	0.	.64	0.	-.68	0.	PRAR221A
377-	PRAP	215A	1.	0.	0.	0.	0.	0.	0.	PRAR221A
378-	PRAP	221	13	65625	.769-2	1.	.02661	0.0	0.	PRAR221A
379-	PRAP	221	0.	-.1875	0.	0.	0.	0.	0.	PRAR221A
380-	PRAP	221A	1.	0.	0.	0.	0.	0.	0.	PRAR221A
381-	PRAP	231	11	52174	.03225	1.	0.0	0.0	0.	PRAR231
382-	PRAP	231	0.	0.	0.	0.	0.	0.	0.	PRAR231A
383-	PRAP	231A	1.	0.	0.	0.	0.	0.	0.	PRAR241
384-	PRAP	241	15	27125	.0021722	0.017306	.019478	0.0	0.	PRAR241A
385-	PRAP	241	0.	0.	0.	0.	0.	0.	0.	PRAR242
386-	PRAP	241A	1.	0.	0.	0.	0.	0.	0.	PRAR242A
387-	PRAP	242	15	265125	.0021284	.0159155	.01894390	0.0	0.	PRAR242A
388-	PRAP	242	0.	0.	0.	0.	0.	0.	0.	PRAR243
389-	PRAP	242A	1.	0.	0.	0.	0.	0.	0.	PRAR243A
390-	PRAP	243	15	296	.0021611	.02465	.02682770	0.0	0.	PRAR244
391-	PRAP	243	0.	0.	0.	0.	0.	0.	0.	PRAR244A
392-	PRAP	243A	1.	0.	0.	0.	0.	0.	0.	PRAR245
393-	PRAP	244	15	289	.0020114	.024083	.02509480	0.0	0.	PRAR245A
394-	PRAP	244	0.	0.	0.	0.	0.	0.	0.	PRAR245A
395-	PRAP	244A	1.	0.	0.	0.	0.	0.	0.	PRAR245A
396-	PRAP	245	15	282	.0018688	.0215	.02536880	0.0	0.	PRAR245A
397-	PRAP	245	0.	0.	0.	0.	0.	0.	0.	PRAR245A
398-	PRAP	245A	1.	0.	0.	0.	0.	0.	0.	PRAR245A
399-	PRAP	246	15	275	.0017330	.022915	.024648	0.0	0.	PRAR245A
400-	PRAP	246	0.	0.	0.	0.	0.	0.	0.	PRAR245A

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S O R T E D B U L K D A T A F C H D												
CARD	1	2	3	4	5	6	7	8	9	10		
401- PRAR246A	.83	0.										
402- PRAR	247	15	.268	.0016040	.02233	.02393740					PRAR247	
403- PRAR247	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	PRAR247A	
404- PRAR247A	.83	0.										
405- PRAR	248	15	.223375	.0012964	.0145708	.015867	0.	0.	0.	0.	PRAR249	
406- PRAR248	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	PRAR249A	
407- PRAR248A	.83	0.										
408- PRAR	249	15	.22225	.0011948	.01418	.01537490					PRAR249	
409- PRAR249	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	PRAR249A	
410- PRAR249A	.83	0.										
411- PRAR	253	12	.139392	.024725	1.	.11059-30.0					PRAR253	
412- PRAR253	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	PRAR253A	
413- PRAR253A	.83	0.										
414- PRAR	254	12	.3175	.094966	1.	.1125-2 0.0					PRAR254	
415- PRAR254	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	PRAR254A	
416- PRAR254A	.83	0.										
417- PRAR	151	4	.122	2	1.50	.419-4	.81					
418- PRAR	152	4	.141	2	1.50	.473-4	.81					
419- PRAR	153	4	.120	2	1.50	.419-4	.81					
420- PRAR	154	4	.145	2	1.62	.533-4	.81					
421- PRAR	155	4	.135	2	1.62	.473-4	.81					
422- PRAR	156	4	.171	2	1.60	.128-4	.81					
423- PRAR	157	4	.135	2	1.62	.473-4	.81					
424- PRAR	158	4	.145	2	1.62	.517-4	.81					
425- PRAR	159	10	.141	2	1.60	.473-4	.81					
426- PRAR	160	10	.145	2	3.31	.128-3	.81					
427- PRAR	1	7	.005	2	.784	.186-4	.28					
428- PRAR	2	7	.014	2	1.21	.218-4	.46					
429- PRAR	3	7	.003	2	.644	.176-4	.23					
430- PRAR	4	7	.011	2	1.12	.207-4	.40					
431- PRAR	5	1	.004	2	.7	.180-4	.25					
432- PRAR	6	1	.009	2	1.04	.207-4	.37					
433- PRAR	7	1	.003	2	.46	.167-4	.23					
434- PRAR	8	1	.008	2	.68	.182-4	.34					
435- PRAR	9	1	.003	2	.42	.164-4	.21					
436- PRAR	10	1	.006	2	.52	.179-4	.31					
437- PRAR	11	1	.002	2	.38	.162-4	.19					
438- PRAR	12	1	.005	2	.54	.173-4	.27					
439- PRAR	13	6	.001	2	.32	.141-4	.16					
440- PRAR	14	6	.003	2	.48	.157-4	.24					
441- PRAR	15	6	.001	2	.28	.139-4	.14					
442- PRAR	16	6	.002	2	.40	.147-4	.20					
443- PRAR	17	6	.001	2	.24	.136-4	.12					
444- PRAR	18	6	.002	2	.34	.143-4	.17					
445- PRAR	23	7	.120	2	2.21	.471-4	.76					
446- PRAR	24	7	.109	2	2.08	.467-4	.74					
447- PRAR	25	7	.081	2	1.79	.443-4	.64					
448- PRAR	26	7	.085	2	1.92	.451-4	.65					
449- PRAR	27	3	.061	2	1.64	.383-4	.57					

## FINAL VIBRATION MODES ANALYSIS

## SORTED BULK DATA - ECHN

CARD	1	2	3	4	5	6	7	8	9	10
451-	PIRPLT 29	3	038	1.04	1.04	1.04	1.04	1.04	1.04	1.04
452-	PIRPLT 30	3	043	1.10	1.10	1.10	1.10	1.10	1.10	1.10
453-	PIRPLT 31	3	030	0.92	0.92	0.92	0.92	0.92	0.92	0.92
454-	PIRPLT 32	3	028	0.88	0.88	0.88	0.88	0.88	0.88	0.88
455-	PIRPLT 33	3	020	0.82	0.82	0.82	0.82	0.82	0.82	0.82
456-	PIRPLT 34	3	029	0.870	0.870	0.870	0.870	0.870	0.870	0.870
457-	PIRPLT 35	3	008	0.72	0.72	0.72	0.72	0.72	0.72	0.72
458-	PIRPLT 36	3	010	0.76	0.76	0.76	0.76	0.76	0.76	0.76
459-	PIRPLT 37	3	014	0.62	0.62	0.62	0.62	0.62	0.62	0.62
460-	PIRPLT 38	3	007	0.66	0.66	0.66	0.66	0.66	0.66	0.66
461-	PIRPLT 39	3	004	0.52	0.52	0.52	0.52	0.52	0.52	0.52
462-	PIRPLT 40	3	005	0.54	0.54	0.54	0.54	0.54	0.54	0.54
463-	PIRPLT 41	3	037	2.212	2.212	2.212	2.212	2.212	2.212	2.212
464-	PIRPLT 42	3	016	2.31	2.31	2.31	2.31	2.31	2.31	2.31
465-	PIRPLT 43	3	035	2.20	2.20	2.20	2.20	2.20	2.20	2.20
466-	PIRPLT 44	3	043	2.20	2.20	2.20	2.20	2.20	2.20	2.20
467-	PIRPLT 45	3	007	2.02	2.02	2.02	2.02	2.02	2.02	2.02
468-	PIRPLT 46	3	006	2.02	2.02	2.02	2.02	2.02	2.02	2.02
469-	PIRPLT 47	3	058	1.27	1.27	1.27	1.27	1.27	1.27	1.27
470-	PIRPLT 48	3	044	1.25	1.25	1.25	1.25	1.25	1.25	1.25
471-	PIRPLT 49	3	037	1.12	1.12	1.12	1.12	1.12	1.12	1.12
472-	PIRPLT 50	3	028	1.02	1.02	1.02	1.02	1.02	1.02	1.02
473-	PIRPLT 51	3	027	1.00	1.00	1.00	1.00	1.00	1.00	1.00
474-	PIRPLT 52	3	013	0.89	0.89	0.89	0.89	0.89	0.89	0.89
475-	PIRPLT 53	3	010	0.88	0.88	0.88	0.88	0.88	0.88	0.88
476-	PIRPLT 54	3	010	0.76	0.76	0.76	0.76	0.76	0.76	0.76
477-	PIRPLT 55	3	008	0.74	0.74	0.74	0.74	0.74	0.74	0.74
478-	PIRPLT 56	3	007	0.64	0.64	0.64	0.64	0.64	0.64	0.64
479-	PIRPLT 57	3	006	0.62	0.62	0.62	0.62	0.62	0.62	0.62
480-	PIRPLT 58	3	017	2.31	2.31	2.31	2.31	2.31	2.31	2.31
481-	PIRPLT 59	3	016	2.27	2.27	2.27	2.27	2.27	2.27	2.27
482-	PIRPLT 60	3	015	2.23	2.23	2.23	2.23	2.23	2.23	2.23
483-	PIRPLT 61	3	013	2.12	2.12	2.12	2.12	2.12	2.12	2.12
484-	PIRPLT 62	3	011	1.99	1.99	1.99	1.99	1.99	1.99	1.99
485-	PIRPLT 63	3	008	1.94	1.94	1.94	1.94	1.94	1.94	1.94
486-	PIRPLT 64	3	009	1.29	1.29	1.29	1.29	1.29	1.29	1.29
487-	PIRPLT 65	3	053	1.21	1.21	1.21	1.21	1.21	1.21	1.21
488-	PIRPLT 66	3	040	1.15	1.15	1.15	1.15	1.15	1.15	1.15
489-	PIRPLT 67	3	031	1.08	1.08	1.08	1.08	1.08	1.08	1.08
490-	PIRPLT 68	3	020	1.04	1.04	1.04	1.04	1.04	1.04	1.04
491-	PIRPLT 69	3	020	0.96	0.96	0.96	0.96	0.96	0.96	0.96
492-	PIRPLT 70	3	010	0.92	0.92	0.92	0.92	0.92	0.92	0.92
493-	PIRPLT 71	3	010	0.84	0.84	0.84	0.84	0.84	0.84	0.84
494-	PIRPLT 72	3	010	0.78	0.78	0.78	0.78	0.78	0.78	0.78
495-	PIRPLT 73	3	008	0.72	0.72	0.72	0.72	0.72	0.72	0.72
496-	PIRPLT 74	3	007	0.66	0.66	0.66	0.66	0.66	0.66	0.66
497-	PIRPLT 75	3	006	0.60	0.60	0.60	0.60	0.60	0.60	0.60
498-	PIRPLT 76	3	015	3.31	3.31	3.31	3.31	3.31	3.31	3.31
499-	PIRPLT 77	3	017	3.31	3.31	3.31	3.31	3.31	3.31	3.31
500-	PIRPLT 78	3	017	3.31	3.31	3.31	3.31	3.31	3.31	3.31
501-	PIRPLT 79	3	017	3.31	3.31	3.31	3.31	3.31	3.31	3.31
502-	PIRPLT 80	3	010	0.84	0.84	0.84	0.84	0.84	0.84	0.84
503-	PIRPLT 81	3	010	0.78	0.78	0.78	0.78	0.78	0.78	0.78
504-	PIRPLT 82	3	008	0.72	0.72	0.72	0.72	0.72	0.72	0.72
505-	PIRPLT 83	3	007	0.66	0.66	0.66	0.66	0.66	0.66	0.66
506-	PIRPLT 84	3	006	0.60	0.60	0.60	0.60	0.60	0.60	0.60
507-	PIRPLT 85	3	015	3.31	3.31	3.31	3.31	3.31	3.31	3.31
508-	PIRPLT 86	3	017	3.31	3.31	3.31	3.31	3.31	3.31	3.31
509-	PIRPLT 87	3	017	3.31	3.31	3.31	3.31	3.31	3.31	3.31
510-	PIRPLT 88	3	017	3.31	3.31	3.31	3.31	3.31	3.31	3.31

ETICAL VIBRATION MODES ANALYSTS

SECRET . B U I L D I N G A T A C T I O N

CARD	1	2	3	4	5	6	7	8	9	10
PIRPLT 01	154	2	154	2	2.27	5.81-4	.78			
PIRPLT 02	118	2	118	2	2.01	5.11-4	.69			
PIRPLT 03	072	2	072	2	1.77	7.81-4	.61			
PIRPLT 04	042	2	042	2	1.57	7.45-4	.54			
PIRPLT 05	044	2	044	2	1.49	3.08-4	.55			
PIRPLT 06	028	2	028	2	0.90	2.94-4	.49			
PIRPLT 07	027	2	027	2	1.0	2.69-4	.50			
PIRPLT 08	020	2	020	2	.88	2.44-4	.44			
PIRPLT 09	020	2	020	2	.88	2.44-4	.44			
PIRPLT 100	010	2	010	2	.78	2.05-4	.39			
PIRPLT 101	010	2	010	2	.78	1.89-4	.39			
PIRPLT 102	008	2	008	2	.68	1.82-4	.34			
PIRPLT 103	007	2	007	2	.66	1.71-4	.33			
PIRPLT 104	005	2	005	2	.58	1.75-4	.29			
PIRPLT 105	005	2	005	2	.56	1.74-4	.28			
PIRPLT 106	004	2	004	2	.48	1.68-4	.24			
PIRPLT 107	10	2	10	2	3.81	1.28-3	.81			
PIRPLT 108	089	2	089	2	1.78	2.88-4	.61			
PIRPLT 109	099	2	099	2	1.87	3.70-4	.64			
PIRPLT 110	022	2	022	2	1.15	2.93-4	.43			
PIRPLT 111	027	2	027	2	1.28	2.79-4	.44			
PIRPLT 112	014	2	014	2	1.07	2.18-4	.37			
PIRPLT 113	015	2	015	2	.800	2.33-4	.40			
PIRPLT 114	019	2	019	2	.660	1.07-4	.33			
PIRPLT 115	010	2	010	2	.72	2.21-4	.36			
PIRPLT 116	007	2	007	2	.60	1.93-4	.30			
PIRPLT 117	008	2	008	2	.64	1.96-4	.32			
PIRPLT 118	005	2	005	2	.530	1.71-4	.26			
PIRPLT 119	005	2	005	2	.56	1.74-4	.28			
PIRPLT 120	003	2	003	2	.46	1.67-4	.23			
PIRPLT 121	003	2	003	2	.48	1.82-4	.24			
PIRPLT 122	002	2	002	2	.40	1.47-4	.20			
PIRPLT 123	002	2	002	2	.40	1.47-4	.20			
PIRPLT 124	12676	2	12676	2	3057013854	15285				
PIRPLT 125	005	2	005	2	.784	1.86-4	.28			
PIRPLT 126	001	2	001	2	.448	1.48-4	.16			
PIRPLT 127	004	2	004	2	.728	1.66-4	.26			
PIRPLT 128	001	2	001	2	.335	1.49-4	.17			
PIRPLT 129	002	2	002	2	.532	1.57-4	.21			
PIRPLT 130	001	2	001	2	.308	1.38-4	.11			
PIRPLT 131	002	2	002	2	.38	1.45-4	.19			
PIRPLT 132	0004	2	0004	2	.20	1.73-4	.10			
PIRPLT 133	001	2	001	2	.34	1.43-4	.17			
PIRPLT 134	0003	2	0003	2	.18	1.32-4	.09			
PIRPLT 135	001	2	001	2	.30	1.40-4	.15			
PIRPLT 136	0003	2	0003	2	.16	1.31-4	.08			
PIRPLT 137	001	2	001	2	.28	1.39-4	.14			
PIRPLT 138	0002	2	0002	2	.14	1.29-4	.07			
PIRPLT 139	001	2	001	2	.24	1.35-4	.12			
PIRPLT 140	0007	2	0007	2	.1438526854	1438526854	.071926			

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CARD  
 COUNT  
 551- PIRPLT 141 1 2 3 4 5 6 7 8 9 10  
 552- PIRPLT 690 7 2 2.22 187.526854-.82 .093925-.093925  
 553- PIRPLT 700 3 2.09 465-4 .75 -.75  
 554- PIRPLT 890 10 3.31 518-4 .73 -.73  
 555- PIRPLT 900 3 2.39 128-3 .81 -.81  
 556- PIRPLT 910 3 7.53 583-4 .79 -.79  
 557- PIRPLT 920 3 1.74 015-4 .74 -.74  
 558- PIRPLT 1070 3 2.14 418-4 .52 -.52  
 559- PIRPLT 1100 3 1.57 364-4 .73 -.73  
 560- SEQGP 101 58.5 102 58.8 104 70.5  
 561- SEQGP 105 46.5 106 52.5  
 562- SEQGP 111 34.2 112 58.3 114 58.4  
 563- SPC1 2 5 35 47 59 101  
 ENDATA

\*\*NO ERRORS FOUND - EXECUTE NASTRAN PROGRAM\*\*

METHOD 2 NI, NBR PASSES = 1, EST. TIME = .3  
 METHOD 1 I, NBR PASSES = 1, EST. TIME = .2

A P P E N D I X    B

NASTRAN STATIC ANALYSIS OUTPUT DATA

DISPLACEMENT VECTOR

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	1.162913E-02	-8.555301E-03	-2.710893E-03	0.0
2	G	0.0	0.0	2.252564E-02	-4.629580E-03	-1.993069E-03	0.0
3	G	0.0	0.0	5.909103E-02	-1.943325E-03	-8.417231E-03	0.0
4	G	0.0	0.0	1.817760E-01	-2.001093E-03	-2.134511E-02	0.0
5	G	0.0	0.0	4.227530E-01	9.401448E-04	-4.091050E-02	0.0
6	G	0.0	0.0	6.722853E-01	-6.241153E-04	-6.873565E-02	0.0
7	G	0.0	0.0	1.576551E+00	-1.039742E-02	-1.007569E-01	0.0
8	G	0.0	0.0	2.527253E+00	-1.542975E-02	-1.355193E-01	0.0
9	G	0.0	0.0	3.775343E+00	-2.614389E-02	-1.793348E-01	0.0
10	G	0.0	0.0	5.126262E+00	-3.622777E-02	-1.925329E-01	0.0
11	G	0.0	0.0	-1.276944E-02	-5.989087E-04	0.0	0.0
12	G	0.0	0.0	-9.311233E-03	-3.272300E-04	-1.445500E-03	0.0
13	G	0.0	0.0	0.0	4.501744E-04	-2.396328E-03	0.0
14	G	0.0	0.0	2.613576E-02	-1.621910E-03	-5.867135E-03	0.0
15	G	0.0	0.0	1.038103E-01	-1.120593E-03	-1.476202E-02	0.0
16	G	0.0	0.0	2.738159E-01	-2.257555E-03	-2.913318E-02	0.0
17	G	0.0	0.0	5.846590E-01	-4.269711E-03	-2.168735E-02	0.0
18	G	0.0	0.0	1.107343E+00	-9.239345E-03	-7.941435E-02	0.0
19	G	0.0	0.0	1.850355E+00	-1.619055E-02	-1.083212E-01	0.0
20	G	0.0	0.0	2.830253E+00	-2.539169E-02	-1.457129E-01	0.0
21	G	0.0	0.0	4.036887E+00	-3.394340E-02	-1.750705E-01	0.0
22	G	0.0	0.0	2.406039E+00	-4.306908E-02	-1.943751E-01	0.0
23	G	0.0	0.0	-2.757547E-02	-1.633880E-03	0.0	0.0
24	G	0.0	0.0	-2.027937E-02	-1.034571E-03	-3.100865E-03	0.0
25	G	0.0	0.0	0.0	0.549093E-04	-5.507381E-03	0.0
26	G	0.0	0.0	5.438302E-02	-4.906038E-03	-1.159895E-02	0.0
27	G	0.0	0.0	1.785144E-01	-5.334703E-03	-2.262200E-02	0.0
28	G	0.0	0.0	4.042144E-01	-0.950502E-03	-3.993163E-02	0.0
29	G	0.0	0.0	7.973100E-01	-1.346993E-02	-0.347387E-02	0.0
30	G	0.0	0.0	1.375921E+00	-1.988470E-02	-9.091190E-02	0.0
31	G	0.0	0.0	2.109393E+00	-2.611020E-02	-1.193041E-01	0.0
32	G	0.0	0.0	3.130979E+00	-3.541980E-02	-1.553400E-01	0.0
33	G	0.0	0.0	4.424142E+00	-4.243492E-02	-1.011734E-01	0.0
34	G	0.0	0.0	5.701091E+00	-5.122303E-02	-1.193544E-01	0.0
35	G	0.0	0.0	-5.288357E-02	-1.950706E-03	0.0	0.0
36	G	0.0	0.0	-3.849830E-02	-1.093089E-03	-6.102518E-03	0.0
37	G	0.0	0.0	0.0	1.242886E-03	-1.107423E-02	0.0
38	G	0.0	0.0	9.135407E-02	-1.059735E-02	-1.775095E-02	0.0
39	G	0.0	0.0	2.047664E-01	-1.209940E-02	-3.113006E-02	0.0
40	G	0.0	0.0	2.654199E-01	-1.749537E-02	-5.095955E-02	0.0
41	G	0.0	0.0	1.015242E+00	-2.376695E-02	-7.653377E-02	0.0
42	G	0.0	0.0	1.645259E+00	-3.054037E-02	-1.020168E-01	0.0
43	G	0.0	0.0	2.472980E+00	-3.000210E-02	-1.309358E-01	0.0
44	G	0.0	0.0	3.523378E+00	-4.515062E-02	-1.647037E-01	0.0
45	G	0.0	0.0	4.750721E+00	-5.004203E-02	-1.853242E-01	0.0
46	G	0.0	0.0	5.983463E+00	-5.199300E-02	-1.934245E-01	0.0
47	G	0.0	0.0	-8.108793E-02	-2.065975E-03	0.0	0.0
48	G	0.0	0.0	-6.000195E-02	-1.252073E-03	-9.333306E-03	0.0
49	G	0.0	0.0	0.0	1.034912E-03	-1.714947E-02	0.0
50	G	0.0	0.0	0.0	-1.350703E-02	-2.178885E-02	0.0

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J I S P - A C E M E N T V E C T O R

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
51	G	0.0	0.0	3.653310E-01	-2.116717E-02	-4.048197E-02	0.0
52	G	0.0	0.0	7.195601E-01	-2.794744E-02	-6.137873E-02	0.0
53	G	0.0	0.0	1.231322E+00	-3.300065E-02	-8.016320E-02	0.0
54	G	0.0	0.0	1.916934E+00	-4.136040E-02	-1.137235E-01	0.0
55	G	0.0	0.0	2.759998E+00	-4.890761E-02	-1.430034E-01	0.0
56	G	0.0	0.0	3.861301E+00	-5.494375E-02	-1.721793E-01	0.0
57	G	0.0	0.0	5.031534E+00	-5.459017E-02	-1.844355E-01	0.0
58	G	0.0	0.0	6.203187E+00	-5.203419E-02	-1.936875E-01	0.0
59	G	0.0	0.0	-1.506527E-01	-3.855400E-03	0.0	0.0
60	G	0.0	0.0	-7.551442E-02	-3.155082E-03	-1.104308E-02	0.0
61	G	0.0	0.0	0.0	1.498398E-04	-2.411348E-02	0.0
62	G	0.0	0.0	9.670728E-02	-2.059610E-02	-2.579175E-02	0.0
63	G	0.0	0.0	4.455892E-01	-2.952393E-02	-4.714592E-02	0.0
64	G	0.0	0.0	8.525483E-01	-3.768769E-02	-7.098505E-02	0.0
65	G	0.0	0.0	1.414512E+00	-4.535110E-02	-9.650084E-02	0.0
66	G	0.0	0.0	2.145722E+00	-5.140387E-02	-1.242703E-01	0.0
67	G	0.0	0.0	3.060140E+00	-5.586071E-02	-1.538594E-01	0.0
68	G	0.0	0.0	4.144572E+00	-5.915132E-02	-1.783102E-01	0.0
69	G	0.0	0.0	5.352546E+00	-5.775276E-02	-1.923266E-01	0.0
70	G	0.0	0.0	6.50927E+00	-5.326378E-02	-1.960111E-01	0.0
71	G	0.0	0.0	-2.237630E-03	-2.801714E-02	-2.723032E-02	0.0
72	G	0.0	0.0	2.137443E-01	-3.025952E-02	-3.587584E-02	0.0
73	G	0.0	0.0	5.044443E-01	-3.946104E-02	-5.000344E-02	0.0
74	G	0.0	0.0	9.517401E-01	-4.793815E-02	-8.147624E-02	0.0
75	G	0.0	0.0	1.634415E+00	-5.610645E-02	-1.057054E-01	0.0
76	G	0.0	0.0	2.586182E+00	-6.270431E-02	-1.359173E-01	0.0
77	G	0.0	0.0	3.343733E+00	-6.930090E-02	-1.655384E-01	0.0
78	G	0.0	0.0	4.442395E+00	-8.490400E-02	-1.857014E-01	0.0
79	G	0.0	0.0	5.636172E+00	-8.071350E-02	-1.960300E-01	0.0
80	G	0.0	0.0	6.792255E+00	-8.526712E-02	-2.004220E-01	0.0
81	G	0.0	0.0	6.934883E+00	-4.193504E-02	-3.439235E-02	0.0
82	G	0.0	0.0	2.650250E-01	-4.751697E-02	-4.077281E-02	0.0
83	G	0.0	0.0	6.779411E-01	-5.447203E-02	-7.201402E-02	0.0
84	G	0.0	0.0	1.223975E+00	-6.287840E-02	-9.307332E-02	0.0
85	G	0.0	0.0	1.914917E+00	-7.415258E-02	-1.247785E-01	0.0
86	G	0.0	0.0	2.785605E+00	-7.998418E-02	-1.551648E-01	0.0
87	G	0.0	0.0	3.806742E+00	-7.890045E-02	-1.799461E-01	0.0
88	G	0.0	0.0	4.931131E+00	-7.240572E-02	-1.957979E-01	0.0
89	G	0.0	0.0	6.193360E+00	-6.457051E-02	-2.000930E-01	0.0
90	G	0.0	0.0	7.164142E+00	-6.000740E-02	-2.036138E-01	0.0
91	G	0.0	0.0	-9.097307E-02	-2.036876E-03	0.0	0.0
101	G	0.0	0.0	-5.706512E-02	-8.506398E-03	-6.535922E-03	0.0
102	G	0.0	0.0	2.336570E-03	-1.393420E-02	-1.467113E-02	0.0
103	G	0.0	0.0	1.252695E-03	-2.211714E-02	-2.324673E-02	0.0
104	G	0.0	0.0	1.747274E-03	-1.570555E-02	-2.507308E-02	0.0
105	G	0.0	0.0	2.112535E-01	-1.993390E-02	-3.092390E-02	0.0
106	G	0.0	0.0	2.477339E-01	-2.400115E-02	-3.584351E-02	0.0
107	G	0.0	0.0	7.111504E+00	-5.203419E-02	-1.930873E-01	0.0
111	G	0.0	0.0	6.653225E+00	-5.203419E-02	-1.930873E-01	0.0
112	G	0.0	0.0	9.248696E+00	-5.122316E-02	-1.930873E-01	0.0
113	G	0.0	0.0				



APRIL 18, 1973 NASTRAN 6/15/72

024-34E COMPOSITE WING FINAL ANALYSIS  
A.J. ZINDEL AERO STRUCTURES RESEARCH GROUP

POINT ID.	TYPE	DISPLACEMENT			VECTOR		
		T1	T2	T3	R1	R2	R3
114	3	3.3	3.3	4.793320E+00	-5.122310E-02	-1.938740E-01	0.0

FORCES OF SINGLE-POINT CONSTRAINT

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
11	G	0.0	0.0	0.0	0.0	4.129380E+03	0.0
13	G	0.0	0.0	3.311551E+02	0.0	0.0	0.0
23	G	0.0	0.0	0.0	0.0	1.27775+E+04	0.0
25	G	0.0	0.0	2.770329E+02	0.0	0.0	0.0
35	G	0.0	0.0	0.0	0.0	2.540515E+04	0.0
37	G	0.0	0.0	-1.067338E+02	0.0	0.0	0.0
47	G	0.0	0.0	0.0	0.0	2.862998E+04	0.0
49	G	0.0	0.0	-2.163495E+03	0.0	0.0	0.0
59	G	0.0	0.0	0.0	0.0	1.484389E+04	0.0
61	G	0.0	0.0	-3.29+001E+03	0.0	0.0	0.0
101	G	0.0	0.0	0.0	0.0	1.849900E+04	0.0

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## FORCES IN BENDING TRIANGLES (C T R P L T)

ELEMENT ID.	BEND-MOMENT		BEND-MOMENT		TWIST-MOMENT		SHEAR	
	X	Y	X	Y	X	Y	X	Y
1	9.774233E+02	1.762556E+01	3.496164E+00	1.232787E+00	1.155394E+01	1.155394E+01		
2	3.945253E+01	9.414538E+01	-3.1677613E+01	-1.163734E+01	-2.069426E+01	-2.069426E+01		
3	1.567763E+01	3.112332E+01	-1.374228E+01	5.888715E+01	7.127462E+00	7.127462E+00		
4	6.490935E+01	1.172136E+02	-6.775094E+01	-6.775094E+01	-2.017627E+01	-2.017627E+01		
5	4.966833E+01	5.410377E+01	-2.442492E+01	3.006280E+00	1.719420E+01	1.719420E+01		
6	1.123222E+02	1.141843E+02	-5.774210E+01	-1.510938E+01	-2.689920E+01	-2.689920E+01		
7	5.428363E+01	1.154374E+01	-9.821294E+01	1.351309E+01	0.993912E+00	0.993912E+00		
8	1.256553E+02	1.119349E+02	-9.103427E+01	-2.311114E+00	-1.709238E+01	-1.709238E+01		
9	5.615153E+01	7.103454E+01	-4.330930E+01	5.009918E+00	1.205791E+01	1.205791E+01		
10	9.657233E+01	1.356533E+02	-8.007773E+01	1.389014E+01	-1.892154E+01	-1.892154E+01		
11	3.352238E+01	6.922132E+01	-3.429226E+01	-2.753488E+00	1.772608E+01	1.772608E+01		
12	7.419533E+01	1.208748E+02	-7.113089E+01	7.062508E+00	-3.015937E+01	-3.015937E+01		
13	1.210866E+01	3.341135E+01	-1.293593E+01	2.002349E+00	5.193593E+00	5.193593E+00		
14	3.043590E+01	6.332824E+01	-4.144245E+01	2.555333E+00	-9.001674E+00	-9.001674E+00		
15	7.695223E+00	2.293161E+01	-1.562249E+01	-1.471402E+00	5.511147E+00	5.511147E+00		
16	1.514721E+01	3.767519E+01	-2.201158E+01	5.941842E+00	-7.197502E+00	-7.197502E+00		
17	-9.131315E+02	1.009475E+01	-1.636189E+01	-1.083930E+00	6.476965E+00	6.476965E+00		
18	-8.092629E+01	2.536355E+01	-1.516359E+01	1.087939E+01	5.056718E+00	5.056718E+00		
19	3.209413E+02	0.153468E+02	-3.964347E+02	5.227974E+01	5.183930E+00	5.183930E+00		
20	5.514235E+02	1.073120E+03	-6.361815E+02	-7.913709E+01	5.662724E+00	5.662724E+00		
21	4.715011E+02	7.934700E+02	-5.439335E+02	4.784805E+01	3.593259E+00	3.593259E+00		
22	6.310405E+02	1.071302E+03	-7.259582E+02	-3.887368E+01	-4.409475E+01	-4.409475E+01		
23	6.365027E+02	3.013551E+02	-5.463359E+02	+981117E+01	6.924237E+01	6.924237E+01		
24	6.718438E+02	1.339312E+03	-7.704205E+02	-3.109780E+01	-5.565175E+01	-5.565175E+01		
25	6.052113E+02	7.725415E+02	-5.224334E+02	1.989593E+01	5.571447E+01	5.571447E+01		
26	0.214775E+02	8.444316E+02	-6.43310E+02	3.236170E+01	-7.900373E+01	-7.900373E+01		
27	4.641511E+02	7.844332E+02	-5.11507E+02	-1.572527E+01	9.853008E+01	9.853008E+01		
28	+9.31307E+02	0.593390E+02	-4.904109E+02	+173359E+01	-7.482742E+01	-7.482742E+01		
29	2.982933E+02	5.452170E+02	-3.651102E+02	-3.448757E+01	8.586337E+01	8.586337E+01		
30	3.424384E+02	4.441336E+02	-3.578709E+02	3.136092E+01	-7.910590E+01	-7.910590E+01		
31	1.313022E+02	3.329329E+02	-1.621508E+02	1.539971E+01	2.338547E+01	2.338547E+01		
32	1.012412E+02	3.245326E+02	-1.960751E+02	2.157278E+01	-3.748475E+01	-3.748475E+01		
33	1.513729E+02	3.207204E+02	-2.583417E+02	-1.901412E+01	4.298252E+01	4.298252E+01		
34	2.393141E+01	1.226931E+02	-1.012740E+02	2.379336E+01	-2.634971E+01	-2.634971E+01		
35	-5.84747E+00	6.183357E+01	-4.712862E+01	-2.397376E+01	1.110050E+01	1.110050E+01		
36	-2.438929E+01	5.276742E+01	-4.177002E+01	1.980343E+01	-1.407027E+01	-1.407027E+01		
37	7.441033E+02	1.759317E+03	-9.050363E+02	8.175858E+01	2.571862E+01	2.571862E+01		
38	1.507593E+03	2.580304E+03	-1.291579E+03	-1.223935E+02	-1.099707E+01	-1.099707E+01		
39	9.951255E+02	2.337740E+03	-1.211322E+03	1.442475E+02	6.969741E+01	6.969741E+01		
40	1.324292E+03	2.651532E+03	-1.578725E+03	-4.159030E+01	-1.071008E+02	-1.071008E+02		
41	1.355103E+03	1.842755E+03	-1.162628E+03	8.309492E+01	1.129392E+02	1.129392E+02		
42	1.013035E+03	1.981424E+03	-1.255572E+03	4.524337E+01	-1.377708E+02	-1.377708E+02		
43	9.314641E+02	1.616947E+03	-9.615742E+02	-2.973949E+01	1.059681E+02	1.059681E+02		
44	8.013347E+02	1.396136E+03	-9.178115E+02	5.141707E+01	-1.077808E+02	-1.077808E+02		
45	0.906441E+02	1.237129E+03	-7.737620E+02	-4.545043E+01	1.632149E+02	1.632149E+02		
46	0.140935E+02	1.030759E+03	-0.720018E+02	5.0453425E+01	-1.001935E+02	-1.001935E+02		
47	4.210937E+02	8.001930E+02	-5.242093E+02	-4.119050E+01	9.267002E+01	9.267002E+01		
48	4.629355E+02	0.957542E+02	-5.269408E+02	4.600993E+01	-7.500140E+01	-7.500140E+01		
49	2.037431E+02	5.380150E+02	-2.621901E+02	-3.400973E+01	5.069035E+01	5.069035E+01		
50	1.724433E+02	3.233272E+02	-1.094412E+02	2.147714E+01	-5.069035E+01	-5.069035E+01		

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FORCES IN BENDING TRIANGLES (CIRPLT)

ELEMENT I, J.	BEND-MOMENT X	BEND-MOMENT Y	TWIST-MOMENT	SHEAR X	SHEAR Y
59	1.9170395E+02	2.2220146E+02	-1.505999E+02	-2.715066E+01	3.398267E+01
60	4.901052E+01	1.4455039E+02	-1.090053E+02	1.193003E+01	-3.360435E+01
61	1.927175E+00	9.799255E+01	-5.702303E+01	-1.092853E+01	1.632305E+01
62	1.422120E+01	6.284331E+01	-3.026008E+01	9.401140E+00	-1.923376E+01
67	1.224954E+03	3.737459E+03	-1.539490E+03	9.821740E+01	5.654015E+01
68	7.759193E+02	4.706948E+03	-9.070778E+02	-1.151357E+02	-2.395276E+02
69	2.190725E+03	2.390010E+03	-2.029476E+03	2.110145E+02	-4.252144E+02
70	1.432555E+03	3.359571E+03	-1.558127E+03	-1.008143E+02	1.908522E+02
71	1.095037E+03	2.398145E+03	-1.020212E+03	-5.070951E+01	1.331400E+02
72	1.150945E+03	2.222551E+03	-1.270070E+03	7.833959E+01	-1.150190E+02
73	6.760313E+02	1.915904E+03	-1.084639E+03	-5.082235E+01	1.213454E+02
74	3.398475E+02	1.542541E+03	-9.195895E+02	7.417981E+01	-1.012754E+02
75	5.040535E+02	1.243352E+03	-7.284000E+02	-5.934593E+01	1.011895E+02
76	5.501690E+02	9.303352E+02	-5.959448E+02	5.070951E+01	-0.142082E+01
77	3.151477E+02	0.202227E+02	-3.897110E+02	-4.505150E+01	5.474412E+01
78	3.047874E+02	5.621435E+02	-3.591557E+02	4.010552E+01	-5.050099E+01
79	1.031239E+02	3.818238E+02	-1.952271E+02	-4.020942E+01	4.170843E+01
80	1.091252E+02	3.098326E+02	-1.717045E+02	2.009708E+01	-9.053616E+01
81	3.023143E+01	1.915174E+02	-1.202329E+02	-2.008103E+01	3.078000E+01
82	0.900279E+01	1.130452E+02	-0.435970E+01	1.494501E+01	-2.664099E+01
83	1.593413E+01	3.369809E+01	-3.895200E+01	-1.900736E+01	1.892070E+01
84	1.700308E+01	7.697006E+01	-1.635701E+01	9.572903E+00	0.000070E+02
89	1.400553E+03	4.893939E+03	-1.019102E+03	3.476308E+01	-5.134121E+02
90	1.514201E+03	4.862157E+03	-2.647207E+03	5.987734E+01	-7.373552E+01
91	1.015351E+03	2.774250E+03	-1.468875E+03	1.840505E+02	1.677799E+02
92	1.272447E+03	2.693732E+03	-1.350800E+03	-1.200085E+02	9.097142E+01
93	7.324053E+02	2.395358E+03	-1.010874E+03	-0.468321E+01	-7.800998E+01
94	6.919735E+02	1.325890E+03	-7.008430E+02	6.508940E+01	3.332834E+01
95	0.091700E+02	1.384939E+03	-7.268310E+02	-5.529581E+01	5.818901E+01
96	4.747625E+02	8.859795E+02	-5.168420E+02	5.072250E+01	-2.671000E+01
97	4.137735E+02	6.771901E+02	-5.102595E+02	-5.705009E+01	4.036570E+01
98	3.230145E+02	6.134313E+02	-3.512112E+02	3.970017E+01	-1.999701E+02
99	2.895211E+02	6.220714E+02	-3.007509E+02	-4.709850E+01	-2.654480E+01
100	1.930995E+02	2.937413E+02	-1.092158E+02	2.701920E+01	3.526210E+01
101	1.522035E+02	3.995120E+02	-1.790143E+02	4.501702E+01	-1.900059E+01
102	1.071397E+02	1.987214E+02	-1.252903E+02	1.909833E+01	1.025197E+01
103	5.197465E+01	1.033915E+02	-0.090627E+01	-1.017906E+01	-9.088012E+00
104	4.034045E+01	4.435928E+01	-4.749904E+01	1.379859E+01	2.320043E+01
105	6.930032E+00	-1.723333E+01	-2.021815E+01	-1.382295E+01	-1.900059E+01
106	2.113104E+01	-2.510111E+01	-1.059503E+01	4.047130E+00	-7.088012E+00
107	1.510179E+03	5.210452E+03	-3.706430E+03	-1.250745E+02	1.829504E+02
108	0.808057E+02	4.721787E+02	-7.800975E+02	8.650983E+01	5.201470E+01
109	2.393022E+02	2.610372E+03	-4.012795E+02	9.005723E+01	-7.499446E+01
110	2.548532E+02	0.951020E+02	-2.890239E+02	4.740274E+01	-3.400100E+00
111	2.934713E+02	9.030322E+02	-3.740701E+02	-0.789703E+01	4.032932E+01
112	1.940345E+02	5.032971E+02	-2.210128E+02	4.702335E+01	-1.407443E+00
113	1.919301E+02	5.036337E+02	-2.307795E+02	-3.230200E+01	2.365702E+01
114	1.061127E+02	3.049545E+02	-1.055544E+02	2.293098E+01	1.171604E+00
115	1.247331E+02	3.042912E+02	-1.170700E+02	-2.715750E+01	1.702881E+01

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BQM-342 COMPOSITE WING FINAL ANALYSIS  
A.J.ZINDEL AERO STRUCTURES RESEARCH GROUP

ELEMENT NO.	FORCES IN BENDING TRIANGLES			( C T R P L T )		SHEAR	
	BEND-MOMENT X	BEND-MOMENT Y	TWIST-MOMENT	SHEAR X	SHEAR Y		
117	1.00394E+02	2.53870E+02	-1.50785E+02	-2.25081E+01	1.10820E+01		
118	3.05123E+01	1.49057E+02	-9.36937E+01	1.50933E+01	-9.34725E+00		
119	5.04724E+01	1.23387E+02	-8.04556E+01	-1.73937E+01	1.57606E+01		
120	3.48291E+01	5.17222E+01	-3.2094E+01	6.37930E+00	-8.63247E+00		
121	1.86621E+01	2.00373E+01	-2.27482E+01	-8.40259E+00	1.04400E+01		
122	8.54643E+00	-7.47137E-01	-1.13040E+01	3.05948E+00	-7.02236E+00		
123	1.03261E+00	-1.69535E+01	-5.93397E+00	-2.50282E+00	3.02875E+00		
124	1.01723E+01	-7.14820E+00	-3.08914E+00	5.18414E+00	2.10545E+01		
125	1.17432E+01	4.58832E+01	-2.70410E+01	-2.63508E+00	-3.49518E+00		
126	1.05294E+00	1.88334E+01	-8.23494E+00	1.39930E+00	3.09000E+00		
127	3.16834E+01	1.24313E+02	-3.23411E+01	-5.23501E+00	-1.04609E+01		
128	7.75075E+00	3.50934E+01	-1.07480E+01	2.84725E+00	2.00200E+01		
129	2.33241E+01	7.25584E+01	-1.96340E+01	-4.92805E+00	-3.74481E+01		
130	5.37373E+00	5.49879E+01	-9.91404E+00	3.90316E+00	-3.74481E+01		
131	1.89362E+01	7.26959E+01	-2.00942E+01	-5.77514E+00	-1.03570E+01		
132	4.16433E+00	1.89872E+01	-5.40811E+00	1.70503E+00	2.49772E+01		
133	1.00023E+01	3.53033E+01	-1.54467E+01	-4.35953E+00	-2.64021E+01		
134	3.85883E+00	1.23203E+01	-4.50029E+00	1.39285E+00	4.59770E+01		
135	1.21582E+01	2.54237E+01	-1.26286E+01	-4.70025E+00	8.14960E+01		
136	3.41375E+00	7.36059E+00	-3.93200E+00	1.50776E+00	-3.49248E+01		
137	1.02042E+01	1.55071E+01	-1.60032E+01	-4.50259E+00	1.07408E+00		
138	1.07397E+00	1.57547E+00	-1.81194E+00	8.74680E+01	-8.01840E+01		
139	5.05288E+00	-2.52531E-01	-6.09143E+00	-2.31793E+00	3.47456E+00		
140	1.45214E-01	-8.43857E-01	-3.51979E-01	3.00693E-01	-5.18010E-01		
141	5.11523E-01	-2.35933E+00	-1.39786E+00	2.39526E-01	1.03808E-01		
142	-1.83918E-01	-5.48536E-01	-3.58530E-01	-1.72590E-01	-5.17094E-02		
143	2.00471E+03	2.55054E+03	-1.80313E+03	1.20091E+02	1.00753E+02		
144	1.41397E+03	2.43725E+03	-1.52188E+03	7.28359E+01	-2.45409E+02		
145	7.58705E+02	4.44549E+03	-2.31040E+03	2.37164E+02	4.00007E+02		
146	1.31500E+03	3.23655E+03	-1.50422E+03	-9.33805E+01	3.23930E+02		
147	1.31691E+03	2.41632E+03	-1.27590E+03	1.19937E+02	-3.09070E+01		
148	8.23722E+02	1.93828E+03	-9.92149E+02	1.35316E+02	-8.65813E+01		
149	4.82504E+02	3.81747E+02	-7.37850E+02	1.00219E+02	-4.31789E+01		
150	1.31765E+02	1.07752E+03	-2.51800E+02	-7.18458E+01	1.00999E+02		

FORCES IN BENDING AU AORILATERALS (CQOPLT)					
ELEMENT ID.	BEND-MOMENT X	BEND-MOMENT Y	TWIST-MOMENT	SHEAR X	SHEAR Y
151	4.983511E+01	1.259655E+03	-3.907362E+01	2.474742E+01	1.993552E+01
152	5.832335E+01	3.097511E+02	-1.291933E+02	2.446944E+01	6.247308E+01
153	1.531132E+02	2.151127E+03	-6.913795E+01	4.021112E+01	1.519148E+01
154	1.636321E+02	2.360555E+03	-2.351547E+02	4.502294E+01	4.556077E+01
155	2.946203E+02	4.048532E+03	-8.244751E+01	5.457560E+01	-1.636206E-01
156	3.089373E+02	4.214724E+03	-3.055058E+02	5.962795E+01	1.833518E+01
157	3.029445E+02	5.230508E+03	-6.588241E+01	7.080028E+01	-1.692435E+01
158	3.308551E+02	4.396245E+03	-2.467345E+02	1.045715E+02	-0.533615E+00
159	2.628043E+02	5.523585E+03	-2.301573E+02	2.002007E+01	-1.373097E+01
160	3.838701E+02	6.126235E+03	-1.044440E+02	2.079386E+02	-8.147008E+01

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BQ1-34E COMPOSITE WING FINAL ANALYSIS  
A.J. ZIJDAL AERO STRUCTURES RESEARCH GROUP

## FORCES IN 3 A K ELEMENTS (C O B A R)

ELEMENT ID.	BEND-MOMENT		END-A		END-B		END-C		END-D		END-E		END-F		END-G		END-H		END-I		END-J		END-K		END-L		END-M		END-N		END-O		END-P		END-Q		END-R		END-S		END-T		END-U		END-V		END-W		END-X		END-Y		END-Z		END-AA		END-AB		END-AC		END-AD		END-AE		END-AF		END-AG		END-AH		END-AI		END-AJ		END-AL		END-AM		END-AN		END-AO		END-AP		END-AQ		END-AR		END-AS		END-AT		END-AU		END-AV		END-AW		END-AX		END-AY		END-AZ		END-BA		END-BB		END-BC		END-BD		END-BE		END-BF		END-BG		END-BH		END-BI		END-BJ		END-BL		END-BM		END-BN		END-BO		END-BP		END-BQ		END-BR		END-BS		END-BT		END-BU		END-BV		END-BW		END-BX		END-BY		END-BZ		END-CA		END-CB		END-CC		END-CD		END-CE		END-CF		END-CG		END-CH		END-CI		END-CJ		END-CL		END-CM		END-CN		END-CO		END-CP		END-CQ		END-CR		END-CS		END-CT		END-CU		END-CV		END-CW		END-CX		END-CY		END-CZ		END-DA		END-DB		END-DC		END-DD		END-DE		END-DF		END-DG		END-DH		END-DI		END-DJ		END-DL		END-DM		END-DN		END-DO		END-DP		END-DQ		END-DR		END-DS		END-DT		END-DU		END-DV		END-DW		END-DX		END-DY		END-DZ		END-EA		END-EB		END-EC		END-ED		END-EE		END-EF		END-EG		END-EH		END-EI		END-EJ		END-EL		END-EM		END-EN		END-EO		END-EP		END-EQ		END-ER		END-ES		END-ET		END-EU		END-EV		END-EW		END-EX		END-EY		END-EZ		END-FA		END-FB		END-FC		END-FD		END-FE		END-FF		END-FG		END-FH		END-FI		END-FJ		END-FL		END-FM		END-FN		END-FO		END-FP		END-FQ		END-FR		END-FS		END-FT		END-FU		END-FV		END-FW		END-FX		END-FY		END-FZ		END-GA		END-GB		END-GC		END-GD		END-GE		END-GF		END-GG		END-GH		END-GI		END-GJ		END-GL		END-GM		END-GN		END-GO		END-GP		END-GQ		END-GR		END-GS		END-GT		END-GU		END-GV		END-GW		END-GX		END-GY		END-GZ		END-HA		END-HB		END-HC		END-HD		END-HE		END-HF		END-HG		END-HH		END-HI		END-HJ		END-HL		END-HM		END-HN		END-HO		END-HP		END-HQ		END-HR		END-HS		END-HT		END-HU		END-HV		END-HW		END-HX		END-HY		END-HZ		END-IA		END-IB		END-IC		END-ID		END-IE		END-IF		END-IG		END-IH		END-II		END-IL		END-IM		END-IN		END-IO		END-IP		END-IQ		END-IR		END-IS		END-IT		END-IU		END-IV		END-IW		END-IX		END-IY		END-IZ		END-JA		END-JB		END-JC		END-JD		END-JE		END-JF		END-JG		END-JH		END-JI		END-JL		END-JM		END-JN		END-JO		END-JP		END-JQ		END-JR		END-JS		END-JT		END-JU		END-JV		END-JW		END-JX		END-JY		END-JZ		END-KA		END-KB		END-KC		END-KD		END-KE		END-KF		END-KG		END-KH		END-KI		END-KJ		END-KL		END-KM		END-KN		END-KO		END-KP		END-KQ		END-KR		END-KS		END-KT		END-KU		END-KV		END-KW		END-KX		END-KY		END-KZ		END-LA		END-LB		END-LC		END-LD		END-LE		END-LF		END-LG		END-LH		END-LI		END-LJ		END-LL		END-LM		END-LN		END-LO		END-LP		END-LQ		END-LR		END-LS		END-LT		END-LU		END-LV		END-LW		END-LX		END-LY		END-LZ		END-MA		END-MB		END-MC		END-MD		END-ME		END-MF		END-MG		END-MH		END-MI		END-MJ		END-ML		END-MN		END-MO		END-MP		END-MQ		END-MR		END-MS		END-MT		END-MU		END-MV		END-MW		END-MX		END-MY		END-MZ		END-NA		END-NB		END-NC		END-ND		END-NE		END-NF		END-NG		END-NH		END-NI		END-NJ		END-NL		END-NM		END-NO		END-NP		END-NQ		END-NR		END-NS		END-NT		END-NU		END-NV		END-NW		END-NX		END-NY		END-NZ		END-OA		END-OB		END-OC		END-OD		END-OE		END-OF		END-OG		END-OH		END-OI		END-OJ		END-OL		END-OM		END-ON		END-OO		END-OP		END-OQ		END-OR		END-OS		END-OT		END-OU		END-OV		END-OW		END-OX		END-OY		END-OZ		END-PA		END-PB		END-PC		END-PD		END-PE		END-PF		END-PG		END-PH		END-PI		END-PJ		END-PL		END-PM		END-PN		END-PO		END-PP		END-PQ		END-PR		END-PS		END-PT		END-PU		END-PV		END-PW		END-PX		END-PY		END-PZ		END-QA		END-QB		END-QC		END-QD		END-QE		END-QF		END-QG		END-QH		END-QI		END-QJ		END-QL		END-QM		END-QN		END-QO		END-QP		END-QQ		END-QR		END-QS		END-QT		END-QU		END-QV		END-QW		END-QX		END-QY		END-QZ		END-RA		END-RB		END-RC		END-RD		END-RE		END-RF		END-RG		END-RH		END-RI		END-RJ		END-RL		END-RM		END-RN		END-RO		END-RP		END-RQ		END-RR		END-RS		END-RT		END-RU		END-RV		END-RW		END-RX		END-RY		END-RZ		END-SA		END-SB		END-SC		END-SD		END-SE		END-SF		END-SG		END-SH		END-SI		END-SJ		END-SL		END-SM		END-SN		END-SO		END-SP		END-SQ		END-SR		END-SS		END-ST		END-SU		END-SV		END-SW		END-SX		END-SY		END-SZ		END-TA		END-TB		END-TC		END-TD		END-TE		END-TF		END-TG		END-TH		END-TI		END-TJ		END-TL		END-TM		END-TN		END-TO		END-TP		END-TQ		END-TR		END-TS		END-TT		END-TU		END-TV		END-TW		END-TX		END-TY		END-TZ		END-UA		END-UB		END-UC		END-UD		END-UE		END-UF		END-UG		END-UH		END-UI		END-UJ		END-UL		END-UM		END-UN		END-UO		END-UP		END-UQ		END-UR		END-US		END-UT		END-UV		END-UW		END-UX		END-UY		END-UZ		END-VA		END-VB		END-VC		END-VD		END-VE		END-VF		END-VG		END-VH		END-VI		END-VJ		END-VL		END-VM		END-VN		END-VO		END-VP		END-VQ		END-VR		END-VS		END-VT		END-VU		END-VV		END-VW		END-VX		END-VY		END-VZ		END-WA		END-WB		END-WC		END-WD		END-WE		END-WF		END-WG		END-WH		END-WI		END-WJ		END-WL		END-WM		END-WN		END-WO		END-WP		END-WQ		END-WR		END-WS		END-WT		END-WU		END-WV		END-WX		END-WY		END-WZ		END-XA		END-XB		END-XC		END-XD		END-XE		END-XF		END-XG		END-XH		END-XI		END-XJ		END-XL		END-XM		END-XN		END-XO		END-XP		END-XQ		END-XR		END-XS		END-XT		END-XU		END-XV		END-XW		END-XX		END-XY		END-XZ		END-YA		END-YB		END-YC		END-YD		END-YE		END-YF		END-YG		END-YH		END-YI		END-YJ		END-YL		END-YM		END-YN		END-YO		END-YP		END-YQ		END-YR		END-YS		END-YT		END-YU		END-YV		END-YW		END-YX		END-YZ		END-ZA		END-ZB		END-ZC		END-ZD		END-ZE		END-ZF		END-ZG		END-ZH		END-ZI		END-ZJ		END-ZL		END-ZM		END-ZN		END-ZO		END-ZP		END-ZQ		END-ZR		END-ZS		END-ZT		END-ZU		END-ZV		END-ZW		END-ZX		END-ZY		END-ZZ		END-AA		END-AB		END-AC		END-AD		END-AE		END-AF		END-AG		END-AH		END-AI		END-AJ		END-AL		END-AM		END-AN		END-AO		END-AP		END-AQ		END-AR		END-AS		END-AT		END-AU		END-AV		END-AW		END-AX		END-AY		END-AZ		END-BA		END-BB		END-BC		END-BD		END-BE		END-BF		END-BG		END-BH		END-BI		END-BJ		END-BL		END-BM		END-BN		END-BO		END-BP		END-BQ		END-BR		END-BS		END-BT		END-BU		END-BV		END-BW		END-BX		END-BY		END-BZ		END-CA		END-CB		END-CC		END-CD		END-CE		END-CF		END-CG		END-CH		END-CI		END-CJ		END-CL		END-CM		END-CN		END-CO		END-CP		END-CQ		END-CR		END-CS		END-CT		END-CU		END-CV		END-CW		END-CX		END-CY		END-CZ		END-DA		END-DB		END-DC		END-DD		END-DE		END-DF		END-DG		END-DH		END-DI		END-DJ		END-DL		END-DM		END-DN		END-DO		END-DP		END-DQ		END-DR		END-DS		END-DT		END-DU		END-DV		END-DW		END-DX		END-DY		END-DZ		END-EA		END-EB		END-EC		END-ED		END-EE		END-EF		END-EG		END-EH		END-EI		END-EJ		END-EL		END-EM		END-EN		END-EO		END-EP		END-EQ		END-ER		END-ES		END-ET		END-EU		END-EV		END-EW		END-EX		END-EY		END-EZ		END-FA		END-FB		END-FC		END-FD		END-FE		END-FF		END-FG		END-FH		END-FI		END-FJ		END-FL		END-FM		END-FN		END-FO		END-FP		END-FQ		END-FR		END-FS		END-FT		END-FU		END-FV		END-FW		END-FX		END-FY		END-FZ		END-GA		END-GB		END-GC		END-GD		END-GE		END-GF		END-GG		END-GH		END-GI		END-GJ		END-GL		END-GM		END-GN		END-GO		END-GP		END-GQ		END-GR		END-GS		END-GT		END-GU		END-GV		END-GW		END-GX		END-GY		END-GZ		END-HA		END-HB		END-HC		END-HD		END-HE		END-HF		END-HG		END-HH		END-HI		END-HJ		END-HL		END-HM		END-HN		END-HO		END-HP		END-HQ		END-HR		END-HS		END-HT		END-HU		END-HV		END-HW		END-HX		END-HY		END-HZ		END-IA		END-IB		END-IC		END-ID		END-IE		END-IF		END-IG		END-IH		END-II		END-IL		END-IM		END-IN		END-IO		END-IP		END-IQ		END-IR		END-IS		END-IT		END-IU		END-IV		END-IW		END-IX		END-IY		END-IZ		END-JA		END-JB		END-JC		END-JD		END-JE		END-JF		END-JG		END-JH		END-JI		END-JL		END-JM		END-JN		END-JO		END-JP		END-JQ		END-JR		END-JS		END-JT		END-JU		END-JV		END-JW		END-JX		END-JY		END-JZ		END-KA		END-KB		END-KC		END-KD		END-KE		END-KF		END-KG		END-KH		END-KI		END-KJ		END-KL		END-KM		END-KN		END-KO		END-KP		END-KQ		END-KR		END-KS		END-KT		END-KU		END-KV		END-KW		END-KX		END-KY		END-KZ		END-LA		END-LB		END-LC		END-LD		END-LE		END-LF		END-LG		END-LH		END-LI		END-LJ		END-LL		END-LM		END-LN		END-LO		END-LP		END-LQ		END-LR		END-LS		END-LT		END-LU		END-LV		END-LW		END-LX		END-LY		END-LZ		END-MA		END-MB		END-MC		END-MD		END-ME		END-MF		END-MG		END-MH		END-MI		END-MJ		END-ML		END-MN		END-MO		END-MP		END-MQ		END-MR		END-MS		END-MT		END-MU		END-MV		END-MW		END-MX		END-MY		END-MZ		END-NA		END-NB		END-NC		END-ND		END-NE		END-NF		END-NG		END-NH		END-NI		END-NJ		END-NL		END-NM		END-NO		END-NP		END-NQ		END-NR		END-NS		END-NT		END-NU		END-NV		END-NW		END-NX		END-NY		END-NZ		END-OA		END-OB		END-OC		END-OD		END-OE		END-OF		END-OG		END-OH		END-OI		END-OJ		END-OL		END-OM		END-ON		END-OO		END-OP		END-OQ		END-OR		END-OS		END-OT		END-OU		END-OV		END-OW		END-OX		END-OY		END-OZ		END-PA		END-PB		END-PC		END-PD		END-PE		END-PF		END-PG		END-PH		END-PI		END-PJ		END-PL		END-PM		END-PN		END-PO		END-PP		END-PQ		END-PR		END-PS		END-PT		END-PU		END-PV		END-PW		END-PX		END-PY		END-PZ		END-QA		END-QB		END-QC		END-QD		END-QE		END-QF		END-QG		END-QH		END-QI		END-QJ		END-QL		END-QM		END-QN		END-QO		END-QP		END-QQ		END-QR		END-QS		END-QT		END-QU		END-QV		END-QW		END-QX		END-QY		END-QZ		END-RA		END-RB		END-RC		END-RD		END-RE		END-RF		END-RG		END-RH		END-RI		END-RJ		END-RL		END-RM		END-RN		END-RO		END-RP		END-RQ		END-RR		END-RS		END-RT		END-RU		END-RV		END-RW		END-RX		END-RY		END-RZ		END-SA		END-SB		END-SC		END-SD		END-SE		END-SF		END-SG		END-SH		END-SI		END-SJ		END-SL		END-SM		END-SN	
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BQ1-34L COMPOSITE WING FINAL ANALYSIS  
A.J.JANDEL AERO STRUCTURES RESEARCH GROUP

APRIL 18, 1973 NASTRAN 0/15/72 PAGE 26

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN 3 E N D I N G T R I A N G L E S ( C T R P L T )			PRINCIPAL STRESSES (ZERO SHEAR)		MAX SHEAR
		NORMAL-X	NORMAL-Y	SHEAR-XY	MAJOR	MINOR	
1	-2.80000E-01	-3.793571E+03	-9.870376E+02	-1.957010E+02	3.375439E+01	-1.024030E+03	5.291949E+02
2	-2.80000E-01	3.793571E+03	9.870376E+02	1.957010E+02	1.024030E+03	-3.375439E+01	5.291949E+02
3	-4.60000E-01	-1.296630E+03	-3.193381E+03	1.208359E+03	-6.890163E+02	-3.700064E+03	1.509624E+03
4	-4.60000E-01	1.296630E+03	3.193381E+03	-1.208359E+03	6.890163E+02	3.700064E+03	1.509624E+03
5	-2.30000E-01	-1.134862E+03	-2.388107E+03	1.053575E+03	-4.694890E+02	-2.965304E+03	1.247900E+03
6	-2.30000E-01	1.134862E+03	2.388107E+03	-1.053575E+03	4.694890E+02	2.965304E+03	1.247900E+03
7	-4.00000E-01	-2.329784E+03	-4.252550E+03	2.403809E+03	-8.495310E+02	-5.942702E+03	2.846065E+03
8	-4.00000E-01	2.329784E+03	4.252550E+03	-2.403809E+03	8.495310E+02	5.942702E+03	2.846065E+03
9	-2.50000E-01	-3.104312E+03	-4.010610E+03	1.526557E+03	-1.965306E+03	-5.149856E+03	1.592399E+03
10	-2.50000E-01	3.104312E+03	4.010610E+03	-1.526557E+03	1.965306E+03	5.149856E+03	1.592399E+03
11	-3.70000E-01	-4.017690E+03	-4.094243E+03	2.373842E+03	-2.241816E+03	-7.030117E+03	2.374151E+03
12	-3.70000E-01	4.017690E+03	4.094243E+03	-2.373842E+03	2.241816E+03	7.030117E+03	2.374151E+03
13	-2.30000E-01	-4.161515E+03	-3.951840E+03	2.162962E+03	-1.891177E+03	-8.222179E+03	2.165901E+03
14	-2.30000E-01	4.161515E+03	3.951840E+03	-2.162962E+03	1.891177E+03	8.222179E+03	2.165901E+03
15	-3.40000E-01	-5.127880E+03	-4.759360E+03	3.808950E+03	-1.070278E+03	-8.169622E+03	3.873342E+03
16	-3.40000E-01	5.127880E+03	4.759360E+03	-3.808950E+03	1.070278E+03	8.169622E+03	3.873342E+03
17	-2.10000E-01	-3.930597E+03	-5.014424E+03	3.031055E+03	-1.392803E+03	-7.552219E+03	3.079710E+03
18	-2.10000E-01	3.930597E+03	5.014424E+03	-3.031055E+03	1.392803E+03	7.552219E+03	3.079710E+03
19	-3.10000E-01	-4.079002E+03	-5.469602E+03	4.488833E+03	-5.085729E+02	-9.500631E+03	4.506029E+03
20	-3.10000E-01	4.079002E+03	5.469602E+03	-4.488833E+03	5.085729E+02	9.500631E+03	4.506029E+03
21	-1.90000E-01	-2.883406E+03	-8.275025E+03	3.257705E+03	-9.851794E+02	-8.474312E+03	3.744500E+03
22	-1.90000E-01	2.883406E+03	8.275025E+03	-3.257705E+03	9.851794E+02	8.474312E+03	3.744500E+03
23	-2.70000E-01	-4.100951E+03	-6.527203E+03	3.835666E+03	-1.229470E+03	-9.300431E+03	4.037425E+03
24	-2.70000E-01	4.100951E+03	6.527203E+03	-3.835666E+03	1.229470E+03	9.300431E+03	4.037425E+03
25	-1.60000E-01	-1.950185E+03	-4.865816E+03	2.109749E+03	-8.763833E+02	-5.939017E+03	2.531617E+03
26	-1.60000E-01	1.950185E+03	4.865816E+03	-2.109749E+03	8.763833E+02	5.939017E+03	2.531617E+03
27	-2.40000E-01	-2.082879E+03	-5.545262E+03	3.315396E+03	-6.417213E+02	-7.787420E+03	3.572850E+03
28	-2.40000E-01	2.082879E+03	5.545262E+03	-3.315396E+03	6.417213E+02	7.787420E+03	3.572850E+03
29	-1.40000E-01	-1.077332E+03	-3.210425E+03	1.907219E+03	-4.129980E+01	-4.329057E+03	2.185178E+03
30	-1.40000E-01	1.077332E+03	3.210425E+03	-1.907219E+03	4.129980E+01	4.329057E+03	2.185178E+03
31	-2.00000E-01	-1.511721E+03	-3.767019E+03	2.201158E+03	-1.665231E+02	-5.113817E+03	2.472647E+03
32	-2.00000E-01	1.511721E+03	3.767019E+03	-2.201158E+03	1.665231E+02	5.113817E+03	2.472647E+03



BQ14-34E COMPOSITE WING FINAL ANALYSIS  
A.J. ZINDEL AERO STRUCTURES RESEARCH GROUP

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN SHELLING				PRINCIPAL STRESSES (ZERO SHEAR)				MAX SHEAR	
		NORMAL-X	NORMAL-Y	SHEAR-XY	ANGLE	MAJOR	MINOR	MAJOR	MINOR	MAJOR	MINOR
17	1.230000E-01	1.101976E+01	-2.171371E+03	1.243427E+03	24.3654	5.741574E+02	-2.734509E+03	5.741574E+02	-2.734509E+03	1.654333E+03	1.654333E+03
	-1.230000E-01	-1.101976E+01	2.171371E+03	-1.243427E+03	-24.3654	-5.741574E+02	2.734509E+03	-5.741574E+02	2.734509E+03	1.654333E+03	1.654333E+03
18	1.730000E-01	6.878905E+02	-2.155910E+03	1.290035E+03	21.1144	1.180267E+03	-2.654267E+03	1.180267E+03	-2.654267E+03	1.920277E+03	1.920277E+03
	-1.730000E-01	-6.878905E+02	2.155910E+03	-1.290035E+03	-21.1144	-1.180267E+03	2.654267E+03	-1.180267E+03	2.654267E+03	1.920277E+03	1.920277E+03
23	7.030000E-01	-2.870632E+03	3.397197E+03	2.472343E+03	34.0002	-3.477173E+02	5.623111E+03	-3.477173E+02	5.623111E+03	2.030197E+03	2.030197E+03
	-7.030000E-01	2.870632E+03	-3.397197E+03	-2.472343E+03	-34.0002	3.477173E+02	-5.623111E+03	3.477173E+02	-5.623111E+03	2.030197E+03	2.030197E+03
24	7.400000E-01	-3.735503E+03	7.290192E+03	4.332006E+03	33.8477	-8.298521E+02	1.019504E+04	-8.298521E+02	1.019504E+04	4.082390E+03	4.082390E+03
	-7.400000E-01	3.735503E+03	-7.290192E+03	-4.332006E+03	-33.8477	8.298521E+02	-1.019504E+04	8.298521E+02	-1.019504E+04	4.082390E+03	4.082390E+03
25	5.400000E-01	-3.725490E+03	8.245759E+03	4.297745E+03	36.0232	-5.003435E+02	9.464305E+03	-5.003435E+02	9.464305E+03	4.478378E+03	4.478378E+03
	-5.400000E-01	3.725490E+03	-8.245759E+03	-4.297745E+03	-36.0232	5.003435E+02	-9.464305E+03	5.003435E+02	-9.464305E+03	4.478378E+03	4.478378E+03
26	5.500000E-01	-4.769492E+03	8.161508E+03	5.466893E+03	36.5548	-7.012821E+02	1.216980E+04	-7.012821E+02	1.216980E+04	5.734250E+03	5.734250E+03
	-5.500000E-01	4.769492E+03	-8.161508E+03	-5.466893E+03	-36.5548	7.012821E+02	-1.216980E+04	7.012821E+02	-1.216980E+04	5.734250E+03	5.734250E+03
27	5.700000E-01	-5.391583E+03	7.480951E+03	5.105106E+03	40.5596	-1.522217E+03	1.185032E+04	-1.522217E+03	1.185032E+04	5.157055E+03	5.157055E+03
	-5.700000E-01	5.391583E+03	-7.480951E+03	-5.105106E+03	-40.5596	1.522217E+03	-1.185032E+04	1.522217E+03	-1.185032E+04	5.157055E+03	5.157055E+03
28	5.800000E-01	-7.367099E+03	8.780383E+03	8.910663E+03	41.9041	-1.522174E+03	1.462291E+04	-1.522174E+03	1.462291E+04	6.543807E+03	6.543807E+03
	-5.800000E-01	7.367099E+03	-8.780383E+03	-8.910663E+03	-41.9041	1.522174E+03	-1.462291E+04	1.522174E+03	-1.462291E+04	6.543807E+03	6.543807E+03
29	5.900000E-01	-7.748162E+03	1.035716E+04	7.149040E+03	39.4147	-1.872789E+03	1.644099E+04	-1.872789E+03	1.644099E+04	7.287162E+03	7.287162E+03
	-5.900000E-01	7.748162E+03	-1.035716E+04	-7.149040E+03	-39.4147	1.872789E+03	-1.644099E+04	1.872789E+03	-1.644099E+04	7.287162E+03	7.287162E+03
30	5.900000E-01	-8.320063E+03	1.080103E+04	8.228259E+03	40.7123	-1.239551E+03	1.788214E+04	-1.239551E+03	1.788214E+04	8.321295E+03	8.321295E+03
	-5.900000E-01	8.320063E+03	-1.080103E+04	-8.228259E+03	-40.7123	1.239551E+03	-1.788214E+04	1.239551E+03	-1.788214E+04	8.321295E+03	8.321295E+03
31	4.600000E-01	-7.423635E+03	1.202874E+04	7.837737E+03	36.8142	-1.557231E+03	1.789515E+04	-1.557231E+03	1.789515E+04	8.168958E+03	8.168958E+03
	-4.600000E-01	7.423635E+03	-1.202874E+04	-7.837737E+03	-36.8142	1.557231E+03	-1.789515E+04	1.557231E+03	-1.789515E+04	8.168958E+03	8.168958E+03
32	4.900000E-01	-7.930837E+03	1.145391E+04	8.582296E+03	39.2000	-9.311613E+02	1.845358E+04	-9.311613E+02	1.845358E+04	8.761211E+03	8.761211E+03
	-4.900000E-01	7.930837E+03	-1.145391E+04	-8.582296E+03	-39.2000	9.311613E+02	-1.845358E+04	9.311613E+02	-1.845358E+04	8.761211E+03	8.761211E+03
33	4.100000E-01	-6.115012E+03	1.117695E+04	7.505259E+03	35.6823	-7.254551E+02	1.656631E+04	-7.254551E+02	1.656631E+04	7.920525E+03	7.920525E+03
	-4.100000E-01	6.115012E+03	-1.117695E+04	-7.505259E+03	-35.6823	7.254551E+02	-1.656631E+04	7.254551E+02	-1.656631E+04	7.920525E+03	7.920525E+03
34	4.400000E-01	-7.533645E+03	9.772104E+03	7.873160E+03	40.9540	-7.005909E+02	1.660519E+04	-7.005909E+02	1.660519E+04	7.952316E+03	7.952316E+03
	-4.400000E-01	7.533645E+03	-9.772104E+03	-7.873160E+03	-40.9540	7.005909E+02	-1.660519E+04	7.005909E+02	-1.660519E+04	7.952316E+03	7.952316E+03
35	3.600000E-01	-5.908733E+03	1.363003E+04	7.297148E+03	31.0053	-1.514050E+03	1.802530E+04	-1.514050E+03	1.802530E+04	8.255022E+03	8.255022E+03
	-3.600000E-01	5.908733E+03	-1.363003E+04	-7.297148E+03	-31.0053	1.514050E+03	-1.802530E+04	1.514050E+03	-1.802530E+04	8.255022E+03	8.255022E+03
36	3.800000E-01	-5.129066E+03	1.233224E+04	7.450855E+03	33.6997	-1.160022E+03	1.730128E+04	-1.160022E+03	1.730128E+04	8.070630E+03	8.070630E+03
	-3.800000E-01	5.129066E+03	-1.233224E+04	-7.450855E+03	-33.6997	1.160022E+03	-1.730128E+04	1.160022E+03	-1.730128E+04	8.070630E+03	8.070630E+03

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN 3-D ELEMENTS (CT RPLT)										MAX SHEAR
		PRINCIPAL STRESSES (ZERO SHEAR)										
		NORMAL-X		NORMAL-Y		SHEAR-XY		MAJOR		MINOR		
37	3.100000E-01	-3.345186E+03	-7.101005E+03	5.277505E+03	35.23+9	3.784025E+02	-1.082525E+04	5.601020E+03	5.601020E+03			
	-3.100000E-01	3.345186E+03	7.101005E+03	-5.277505E+03	-54.79+1	1.082525E+04	-5.784025E+02	-5.601020E+03	-5.601020E+03			
38	3.300000E-01	-2.541006E+03	-5.793817E+03	4.774349E+03	35.59+3	8.763127E+02	-9.211196E+03	5.043754E+03	5.043754E+03			
	-3.300000E-01	2.541006E+03	5.793817E+03	-4.774349E+03	-54.43+7	-8.763127E+02	9.211196E+03	-5.043754E+03	-5.043754E+03			
39	2.600000E-01	3.800841E+02	-4.119182E+03	3.000305E+03	27.16+0	1.951732E+03	-5.590830E+03	3.771281E+03	3.771281E+03			
	-2.600000E-01	-3.800841E+02	4.119182E+03	-3.000305E+03	-62.84+1	-1.951732E+03	5.590830E+03	-3.771281E+03	-3.771281E+03			
40	2.700000E-01	-1.300821E+03	-2.049441E+03	2.255581E+03	23.69+3	2.290623E+03	-3.839243E+03	3.064933E+03	3.064933E+03			
	-2.700000E-01	1.300821E+03	2.049441E+03	-2.255581E+03	-60.50+7	-2.290623E+03	3.839243E+03	-3.064933E+03	-3.064933E+03			
45	7.900000E-01	-4.290836E+03	-1.014843E+04	5.207110E+03	33.52+0	-1.245361E+03	-1.319390E+04	5.974270E+03	5.974270E+03			
	-7.900000E-01	4.290836E+03	1.014843E+04	-5.207110E+03	-59.67+0	1.245361E+03	1.319390E+04	-5.974270E+03	-5.974270E+03			
46	7.800000E-01	-5.204542E+03	-1.257781E+04	6.296445E+03	29.82+3	-1.594042E+03	-1.618751E+04	7.296333E+03	7.296333E+03			
	-7.800000E-01	5.204542E+03	1.257781E+04	-6.296445E+03	-60.17+7	1.594042E+04	1.618751E+04	-7.296333E+03	-7.296333E+03			
47	7.400000E-01	-5.460244E+03	-1.116983E+04	0.642581E+03	33.37+7	-1.084980E+03	-1.554510E+04	7.233950E+03	7.233950E+03			
	-7.400000E-01	5.460244E+03	1.116983E+04	-0.642581E+03	-56.62+3	1.084980E+03	1.554510E+04	-7.233950E+03	-7.233950E+03			
48	7.400000E-01	-6.852981E+03	-1.372199E+04	8.169628E+03	33.53+1	-1.425283E+03	-1.914909E+04	8.862204E+03	8.862204E+03			
	-7.400000E-01	6.852981E+03	1.372199E+04	-8.169628E+03	-56.44+3	1.425283E+04	1.914909E+04	-8.862204E+03	-8.862204E+03			
49	7.000000E-01	-7.614098E+03	-1.329831E+04	7.957111E+03	35.17+2	-2.007155E+03	-1.890585E+04	8.449347E+03	8.449347E+03			
	-7.000000E-01	7.614098E+03	1.329831E+04	-7.957111E+03	-54.82+5	2.007155E+04	1.890585E+04	-8.449347E+03	-8.449347E+03			
50	7.600000E-01	-9.578956E+03	-1.444789E+04	9.155214E+03	37.55+5	-2.540000E+03	-2.148678E+04	9.473361E+03	9.473361E+03			
	-7.600000E-01	9.578956E+03	1.444789E+04	-9.155214E+03	-52.44+5	2.540000E+04	2.148678E+04	-9.473361E+03	-9.473361E+03			
51	5.300000E-01	-8.391248E+03	-1.543450E+04	9.413323E+03	35.44+7	-2.197225E+03	-2.212852E+04	9.965647E+03	9.965647E+03			
	-5.300000E-01	8.391248E+03	1.543450E+04	-9.413323E+03	-54.58+5	2.197225E+04	2.212852E+04	-9.965647E+03	-9.965647E+03			
52	6.300000E-01	-9.352618E+03	-1.515492E+04	9.969332E+03	36.87+1	-1.874489E+03	-2.204305E+04	1.038428E+04	1.038428E+04			
	-6.300000E-01	9.352618E+03	1.515492E+04	-9.969332E+03	-53.12+9	1.874489E+03	2.204305E+04	-1.038428E+04	-1.038428E+04			
53	5.700000E-01	-8.506526E+03	-1.667417E+04	1.032373E+04	33.91+6	-1.766630E+03	-2.341406E+04	1.082372E+04	1.082372E+04			
	-5.700000E-01	8.506526E+03	1.667417E+04	-1.032373E+04	-56.03+4	1.766630E+03	2.341406E+04	-1.082372E+04	-1.082372E+04			
54	5.600000E-01	-9.302080E+03	-1.523743E+04	1.017175E+04	36.88+6	-1.674443E+03	-2.286597E+04	1.059571E+04	1.059571E+04			
	-5.600000E-01	9.302080E+03	1.523743E+04	-1.017175E+04	-53.13+4	1.674443E+04	2.286597E+04	-1.059571E+03	-1.059571E+03			
55	5.100000E-01	-7.083710E+03	-1.468432E+04	9.540097E+03	34.93+6	-1.014537E+03	-2.135349E+04	1.018948E+04	1.018948E+04			
	-5.100000E-01	7.083710E+03	1.468432E+04	-9.540097E+03	-55.00+4	1.014537E+04	2.135349E+04	-1.018948E+03	-1.018948E+03			
56	5.000000E-01	-8.936974E+03	-1.288452E+04	9.647052E+03	39.21+5	-1.063850E+03	-2.075705E+04	9.846898E+03	9.846898E+03			
	-5.000000E-01	8.936974E+03	1.288452E+04	-9.647052E+03	-50.73+5	1.063850E+04	2.075705E+04	-9.846898E+03	-9.846898E+03			

BQ4-34E COMPOSITE WING FINAL ANALYSIS  
A.J.ZINDEL AERO STRUCTURES RESEARCH GROUP

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ELEMENT ID.	FIBRE DISTANCE	STRESSES IN 3 E N D I N G		T K I A N G L E S		PRINCIPAL STRESSES (ZERO SHEAR)		MAX SHEAR
		NORMAL-X	NORMAL-Y	SHEAR-XY	ANGLE	MAJOR	MINOR	
57	4.500000E-01 -4.500000E-01	-7.052854E+03 7.052854E+03	-1.760593E+04 -9.076018E+03	9.076018E+03 -9.076018E+03	29.9137 -60.0003	-1.831014E+03 2.262777E+04	-2.262777E+04 1.831014E+03	1.049838E+04 1.049838E+04
58	4.400000E-01 -4.400000E-01	-7.587644E+03 7.587644E+03	-1.445520E+04 1.445520E+04	8.333053E+03 -8.333053E+03	35.8133 -56.1197	-2.000305E+03 2.000305E+03	-2.000305E+03 2.000305E+03	9.013350E+03 9.013350E+03
59	3.800000E-01 -3.800000E-01	-3.804905E+03 3.804905E+03	-8.436557E+03 8.436557E+03	5.722702E+03 -5.722702E+03	34.1106 -55.8354	1.101431E+04 1.231314E+04	-1.231314E+04 -1.101431E+04	6.162375E+03 6.162375E+03
60	3.700000E-01 -3.700000E-01	-2.011488E+03 2.011488E+03	-5.082075E+03 5.082075E+03	4.483797E+03 -4.483797E+03	33.0679 -50.8321	9.034489E+02 8.901445E+03	-8.901445E+03 -9.034489E+02	4.902967E+03 4.902967E+03
61	3.200000E-01 -3.200000E-01	-4.095655E+03 4.095655E+03	-4.477835E+03 4.477835E+03	2.609547E+03 -2.609547E+03	24.8348 -65.1652	1.101747E+03 9.685533E+03	-9.685533E+03 -1.101747E+03	5.423142E+03 5.423142E+03
62	3.100000E-01 -3.100000E-01	-7.450953E+02 7.450953E+02	-3.246904E+03 3.246904E+03	1.503727E+03 -1.503727E+03	25.6710 -64.5290	8.493630E+00 3.998439E+03	-3.998439E+03 -8.493630E+00	2.602490E+03 2.602490E+03
67	8.000000E-01 -8.000000E-01	-5.035180E+03 5.035180E+03	-1.718377E+04 1.718377E+04	7.078113E+03 -7.078113E+03	25.6392 -64.0398	-2.270726E+03 2.054322E+04	-2.054322E+04 -2.270726E+03	9.130249E+03 9.130249E+03
68	8.000000E-01 -8.000000E-01	-3.716933E+03 3.716933E+03	-2.254825E+04 2.254825E+04	4.345838E+03 -4.345838E+03	12.3306 -77.5134	-2.702630E+03 2.359250E+04	-2.359250E+04 -2.702630E+03	1.036193E+04 1.036193E+04
69	7.900000E-01 -7.900000E-01	-1.126891E+04 1.126891E+04	-1.487661E+04 1.487661E+04	1.041095E+04 -1.041095E+04	40.0050 -49.9150	-2.505672E+03 2.563887E+04	-2.563887E+04 -2.505672E+03	1.055607E+04 1.055607E+04
70	7.300000E-01 -7.300000E-01	-8.197879E+03 8.197879E+03	-1.692035E+04 1.692035E+04	8.616913E+03 -8.616913E+03	31.9774 -58.4230	-2.901393E+03 2.221683E+04	-2.221683E+04 -2.901393E+03	9.657726E+03 9.657726E+03
71	7.100000E-01 -7.100000E-01	-7.097705E+03 7.097705E+03	-1.605825E+04 1.605825E+04	9.281460E+03 -9.281460E+03	31.8073 -58.1327	-1.927939E+03 2.262810E+04	-2.262810E+04 -1.927939E+03	1.039000E+04 1.039000E+04
72	5.700000E-01 -5.700000E-01	-8.338259E+03 8.338259E+03	-1.091408E+04 1.091408E+04	9.707920E+03 -9.707920E+03	33.7078 -58.2922	-2.061969E+03 2.339337E+04	-2.339337E+04 -2.061969E+03	1.051420E+04 1.051420E+04
73	5.500000E-01 -5.500000E-01	-8.252469E+03 8.252469E+03	-1.304893E+04 1.304893E+04	1.121818E+04 -1.121818E+04	32.1943 -57.9357	-1.819157E+03 2.448224E+04	-2.448224E+04 -1.819157E+03	1.133154E+04 1.133154E+04
74	5.000000E-01 -5.000000E-01	-9.507708E+03 9.507708E+03	-1.712310E+04 1.712310E+04	1.036516E+04 -1.036516E+04	34.9143 -55.0855	-2.272979E+03 2.435733E+04	-2.435733E+04 -2.272979E+03	1.104243E+04 1.104243E+04
75	5.800000E-01 -5.800000E-01	-8.468920E+03 8.468920E+03	-1.799236E+04 1.799236E+04	1.026109E+04 -1.026109E+04	32.8021 -57.1339	-1.044983E+03 2.481629E+04	-2.481629E+04 -1.044983E+03	1.153556E+04 1.153556E+04
76	5.400000E-01 -5.400000E-01	-9.588100E+03 9.588100E+03	-1.021213E+04 1.021213E+04	1.037923E+04 -1.037923E+04	36.2765 -53.7255	-2.070556E+03 2.382918E+04	-2.382918E+04 -2.070556E+03	1.087970E+04 1.087970E+04

ELEMENT ID.	FIBRE DISTANCE	STRESSES IN JENJING I K I A N G L E S			PRINCIPAL STRESSES (ZERO SHEAR)			MAX SHEAR
		NORMAL-X	NORMAL-Y	SHEAR-XY	MAJOR	MINOR		
77	5.230000E-01	-8.193844E+03	-1.528179E+04	1.613291E+04	-1.328121E+03	-2.314751E+04	1.090980E+04	1.090980E+04
	-5.230000E-01	8.193844E+03	1.528179E+04	-1.613291E+04	2.314751E+04	1.328121E+03	1.090980E+04	1.090980E+04
78	4.800000E-01	-8.754898E+03	-1.349144E+04	8.619737E+03	-2.184011E+03	-2.000233E+04	8.939153E+03	8.939153E+03
	-4.800000E-01	8.754898E+03	1.349144E+04	-8.619737E+03	2.000233E+04	2.184011E+03	8.939153E+03	8.939153E+03
79	4.600000E-01	-7.553977E+03	-1.756412E+04	8.986445E+03	-2.624384E+03	-2.282725E+04	1.029524E+04	1.029524E+04
	-4.600000E-01	7.553977E+03	1.756412E+04	-8.986445E+03	2.282725E+04	2.624384E+03	1.029524E+04	1.029524E+04
80	4.200000E-01	-6.338324E+03	-1.301297E+04	7.211590E+03	-1.762201E+04	-1.702201E+04	7.940367E+03	7.940367E+03
	-4.200000E-01	6.338324E+03	1.301297E+04	-7.211590E+03	1.762201E+04	1.702201E+04	7.940367E+03	7.940367E+03
81	3.900000E-01	-3.246028E+03	-7.468799E+03	4.923084E+03	-8.664732E+01	-1.071415E+04	5.350742E+03	5.350742E+03
	-3.900000E-01	3.246028E+03	7.468799E+03	-4.923084E+03	1.071415E+04	8.664732E+01	5.350742E+03	5.350742E+03
82	3.600000E-01	-3.105126E+03	-5.123032E+03	3.796187E+03	-1.800996E+02	-8.004245E+03	3.927973E+03	3.927973E+03
	-3.600000E-01	3.105126E+03	5.123032E+03	-3.796187E+03	8.004245E+02	1.800996E+03	3.927973E+03	3.927973E+03
83	3.300000E-01	-7.711805E+02	-1.568024E+03	1.878700E+03	7.549580E+02	-3.394703E+03	1.924000E+03	1.924000E+03
	-3.300000E-01	7.711805E+02	1.568024E+03	-1.878700E+03	3.394703E+02	-7.549580E+02	1.924000E+03	1.924000E+03
84	3.000000E-01	-8.551539E+02	-3.348833E+01	9.178506E+02	5.543038E+02	-1.450440E+03	1.003025E+03	1.003025E+03
	-3.000000E-01	8.551539E+02	3.348833E+01	-9.178506E+02	1.450440E+02	-5.543038E+02	1.003025E+03	1.003025E+03
89	8.100000E-01	-7.535237E+03	-2.524898E+04	9.385528E+03	-3.4487370E+03	-2.929685E+04	1.290474E+04	1.290474E+04
	-8.100000E-01	7.535237E+03	2.524898E+04	-9.385528E+03	3.4487370E+03	2.929685E+04	1.290474E+04	1.290474E+04
90	8.100000E-01	-7.760525E+03	-2.508450E+04	1.305757E+04	-2.4497211E+02	-3.259530E+04	1.617279E+04	1.617279E+04
	-8.100000E-01	7.760525E+03	2.508450E+04	-1.305757E+04	3.259530E+02	2.4497211E+02	1.617279E+04	1.617279E+04
91	7.800000E-01	-8.181644E+03	-1.403772E+04	7.541050E+03	-3.020125E+03	-1.919425E+04	8.085550E+03	8.085550E+03
	-7.800000E-01	8.181644E+03	1.403772E+04	-7.541050E+03	3.020125E+03	1.919425E+04	8.085550E+03	8.085550E+03
92	6.900000E-01	-7.440581E+03	-1.578057E+04	7.946580E+03	-2.637940E+03	-2.058941E+04	8.975034E+03	8.975034E+03
	-6.900000E-01	7.440581E+03	1.578057E+04	-7.946580E+03	2.637940E+03	2.058941E+04	8.975034E+03	8.975034E+03
93	5.100000E-01	-6.205609E+03	-1.775243E+04	8.544014E+03	-1.667250E+03	-2.229078E+04	1.031176E+04	1.031176E+04
	-5.100000E-01	6.205609E+03	1.775243E+04	-8.544014E+03	2.229078E+03	1.667250E+04	1.031176E+04	1.031176E+04
94	5.400000E-01	-8.377375E+03	-1.704604E+04	9.067982E+03	-2.643222E+03	-2.278080E+04	1.006879E+04	1.006879E+04
	-5.400000E-01	8.377375E+03	1.704604E+04	-9.067982E+03	2.643222E+03	2.278080E+04	1.006879E+04	1.006879E+04
95	5.500000E-01	-7.514700E+03	-1.731242E+04	9.385395E+03	-1.899608E+03	-2.302751E+04	1.056395E+04	1.056395E+04
	-5.500000E-01	7.514700E+03	1.731242E+04	-9.385395E+03	2.302751E+03	1.899608E+04	1.056395E+04	1.056395E+04
96	4.900000E-01	-8.556341E+03	-1.549762E+04	9.044735E+03	-2.170117E+03	-2.163585E+04	9.732886E+03	9.732886E+03
	-4.900000E-01	8.556341E+03	1.549762E+04	-9.044735E+03	2.170117E+03	2.163585E+04	9.732886E+03	9.732886E+03

BQM-3-E COMPOSITE WING FINAL ANALYSIS  
A.J.ZINDEL AERO STRUCTURES RESEARCH GROUP

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ELEMENT ID.	FIBRE DISTANCE	STRESSES IN 3 E N D I N G T R I A N G L E S ( C T R P L T )				PRINCIPAL STRESSES (ZERO SHEAR)		MAX SHEAR
		NORMAL-X	NORMAL-Y	SHEAR-XY	ANGLE	MAJOR	MINOR	
97	5.00000E-01	-7.562556E+03	-1.064315E+04	9.560207E+03	32.9150	-1.474037E+03	-2.245168E+04	1.047382E+04
	-5.00000E-01	7.562556E+03	1.064315E+04	-9.560207E+03	-57.0844	2.245168E+04	1.474037E+03	1.047382E+04
98	4.40000E-01	-7.126321E+03	-1.343543E+04	7.726646E+03	33.7637	-1.939898E+03	-1.860191E+04	8.361000E+03
	-4.40000E-01	7.126321E+03	1.343543E+04	-7.726646E+03	-56.2313	1.860191E+04	1.939898E+03	8.361000E+03
99	4.40000E-01	-6.281461E+03	-1.363557E+04	7.936519E+03	32.4955	-1.226031E+03	-1.874100E+04	8.757485E+03
	-4.40000E-01	6.281461E+03	1.363557E+04	-7.936519E+03	-57.5035	1.874100E+04	1.226031E+03	8.757485E+03
100	3.90000E-01	-7.554282E+03	-1.165091E+04	7.379417E+03	37.2434	-1.944177E+03	-1.726181E+04	7.058419E+03
	-3.90000E-01	7.554282E+03	1.165091E+04	-7.379417E+03	-52.7550	1.726181E+04	1.944177E+03	7.058419E+03
101	3.90000E-01	-5.928001E+03	-1.207058E+04	6.931557E+03	33.1237	-1.372000E+03	-1.602078E+04	7.627090E+03
	-3.90000E-01	5.928001E+03	1.207058E+04	-6.931557E+03	-56.8713	1.602078E+04	1.372000E+03	7.627090E+03
102	3.40000E-01	-4.555564E+03	-8.445601E+03	5.240091E+03	34.8179	-9.111790E+02	-1.209005E+04	5.589433E+03
	-3.40000E-01	4.555564E+03	8.445601E+03	-5.240091E+03	-55.1821	1.209005E+04	9.111790E+02	5.589433E+03
103	3.30000E-01	-2.450234E+03	-4.732740E+03	3.816887E+03	36.6756	3.923660E+02	-7.975340E+03	3.993650E+03
	-3.30000E-01	2.450234E+03	4.732740E+03	-3.816887E+03	-53.3234	7.975340E+03	-3.923660E+02	3.993650E+03
104	2.90000E-01	-2.513746E+03	-2.572765E+03	2.754979E+03	44.6931	2.118744E+02	-9.298400E+03	2.755137E+03
	-2.90000E-01	2.513746E+03	2.572765E+03	-2.754979E+03	-45.3039	5.298400E+03	-2.118744E+02	2.755137E+03
105	2.80000E-01	-3.914451E+02	9.050663E+02	1.132217E+03	60.4019	1.000038E+03	-1.033017E+03	1.319828E+03
	-2.80000E-01	3.914451E+02	-9.050663E+02	-1.132217E+03	-29.5331	1.033017E+03	1.000038E+03	1.319828E+03
106	2.40000E-01	-1.267863E+03	1.509607E+03	6.357357E+02	77.7313	1.648204E+03	-1.406460E+03	1.527332E+03
	-2.40000E-01	1.267863E+03	-1.509607E+03	-6.357357E+02	-12.2997	1.406460E+03	1.648204E+03	1.527332E+03
107	8.10000E-01	-6.345383E+03	-1.551793E+04	1.796674E+04	37.8404	7.611331E+03	-2.947430E+04	1.854282E+04
	-8.10000E-01	6.345383E+03	1.551793E+04	-1.796674E+04	-52.1555	2.947430E+04	-7.611331E+03	1.854282E+04
108	6.10000E-01	-4.665381E+03	-3.235201E+03	4.853253E+03	49.1878	9.547419E+02	-8.856494E+03	4.905573E+03
	-6.10000E-01	4.665381E+03	3.235201E+03	-4.853253E+03	-40.8122	8.856494E+03	-9.547419E+02	4.905573E+03
109	6.40000E-01	-1.240539E+03	-1.493357E+04	2.982049E+03	12.0012	-9.065849E+02	-1.550959E+04	7.331455E+03
	-6.40000E-01	1.240539E+03	1.493357E+04	-2.982049E+03	-77.9998	1.550959E+04	9.065849E+02	7.331455E+03
110	4.30000E-01	-4.981320E+03	-1.358603E+04	5.649134E+03	26.3535	-2.182796E+03	-1.803846E+04	7.100906E+03
	-4.30000E-01	4.981320E+03	1.358603E+04	-5.649134E+03	-63.6465	2.182796E+03	1.803846E+04	7.100906E+03
111	4.40000E-01	-4.863977E+03	-1.470937E+04	6.109092E+03	25.4840	-1.952183E+03	-1.708116E+04	7.864490E+03
	-4.40000E-01	4.863977E+03	1.470937E+04	-6.109092E+03	-64.5150	1.708116E+04	1.952183E+03	7.864490E+03
112	3.70000E-01	-5.261783E+03	-1.300142E+04	5.841053E+03	27.7321	-2.190980E+03	-2.637422E+04	7.090016E+03
	-3.70000E-01	5.261783E+03	1.300142E+04	-5.841053E+03	-62.2679	2.637422E+04	2.190980E+03	7.090016E+03



044-346 COMPOSITE WING FINAL ANALYSIS  
A.J.ZINDEL AERO STRUCTURES RESEARCH GROUP

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ELEMENT ID.	FIGURE DISTANCE	STRESSES IN 3 E N J I N G			T R I A N G L E S			P R I N C I P A L S T R E S S E S ( Z E R O S H E A R )			MAX SHEAR
		STRESSES IN ELEMENT COORD SYSTEM			S H E A R - X Y			A N G L E			
		NORMAL-X	NORMAL-Y					MAJOR	MINOR		
113	4.00000E-01 -4.00000E-01	-5.091629E+03 5.091629E+03	-1.359023E+04 1.359023E+04	0.154113E+03 -0.154113E+03	27.6878 -62.3122	-1.862316E+03 1.862316E+03	-1.081954E+04 1.862316E+03	7.478014E+03 7.478014E+03			
114	3.30000E-01 -3.30000E-01	-4.491721E+03 4.491721E+03	-1.150197E+04 1.150197E+04	5.391619E+03 -5.391619E+03	28.4845 -61.5135	-1.506528E+03 1.442716E+04	-1.442716E+04 1.506528E+03	6.430318E+03 6.430318E+03			
115	3.60000E-01 -3.60000E-01	-4.489512E+03 4.489512E+03	-1.233037E+04 1.233037E+04	6.148370E+03 -6.148370E+03	28.7331 -61.2619	-1.117859E+03 1.570192E+04	-1.117859E+03 1.570192E+04	7.291901E+03 7.291901E+03			
116	3.00000E-01 -3.00000E-01	-5.186726E+03 5.186726E+03	-1.075755E+04 1.075755E+04	5.781696E+03 -5.781696E+03	32.1395 -57.8615	-1.554484E+03 1.433391E+04	-1.433391E+04 1.554484E+03	6.417073E+03 6.417073E+03			
117	3.20000E-01 -3.20000E-01	-4.721574E+03 4.721574E+03	-1.015483E+04 1.015483E+04	6.028614E+03 -6.028614E+03	32.8713 -57.1237	-8.257809E+02 1.405303E+04	-1.405303E+04 8.257809E+02	6.612432E+03 6.612432E+03			
118	2.60000E-01 -2.60000E-01	-4.180609E+03 4.180609E+03	-7.793127E+03 7.793127E+03	4.871918E+03 -4.871918E+03	34.8440 -59.1554	-7.949700E+02 1.118482E+04	-1.118482E+04 7.949700E+02	5.194952E+03 5.194952E+03			
119	2.80000E-01 -2.80000E-01	-3.274456E+03 3.274456E+03	-6.909094E+03 6.909094E+03	4.505528E+03 -4.505528E+03	34.0149 -55.9651	-2.337295E+02 9.955042E+03	-9.955042E+03 2.337295E+02	4.858348E+03 4.858348E+03			
120	2.30000E-01 -2.30000E-01	-2.070237E+03 2.070237E+03	-3.888705E+03 3.888705E+03	-2.455399E+03 2.455399E+03	38.0326 -51.9674	-7.496137E+02 5.809322E+03	-5.809322E+03 7.496137E+02	2.529091E+03 2.529091E+03			
121	2.40000E-01 -2.40000E-01	-1.492970E+03 1.492970E+03	-1.562991E+03 1.562991E+03	1.819857E+03 -1.819857E+03	44.1343 -45.8657	2.727030E+02 3.368659E+03	-3.368659E+03 2.727030E+02	1.822688E+03 1.822688E+03			
122	2.00000E-01 -2.00000E-01	-8.540434E+02 8.540434E+02	7.711374E+01 -7.711374E+01	1.123040E+03 -1.123040E+03	56.2325 -33.7075	8.250044E+02 1.604934E+03	-1.604934E+03 8.250044E+02	1.215269E+03 1.215269E+03			
123	2.00000E-01 -2.00000E-01	-1.332613E+02 1.332613E+02	1.695633E+03 -1.695633E+03	5.903957E+02 -5.903957E+02	73.5590 -10.0034	1.872095E+03 2.797191E+02	-2.797191E+02 1.872095E+03	1.075907E+03 1.075907E+03			
124	1.00000E-01 -1.00000E-01	-1.511677E+03 1.511677E+03	1.443721E+03 -1.443721E+03	5.902635E+02 -5.902635E+02	78.4038 -11.5952	1.264843E+03 1.732799E+03	-1.732799E+03 1.264843E+03	1.498821E+03 1.498821E+03			
125	2.80000E-01 -2.80000E-01	-6.425896E+02 6.425896E+02	-2.569462E+03 2.569462E+03	1.547305E+03 -1.547305E+03	29.0037 -63.9433	2.172182E+02 3.429270E+03	-3.429270E+03 2.172182E+02	1.823244E+03 1.823244E+03			
126	1.60000E-01 -1.60000E-01	-2.544709E+02 2.544709E+02	-3.313347E+03 3.313347E+03	1.045532E+03 -1.045532E+03	18.6319 -71.3091	8.803699E+01 3.365855E+03	-3.365855E+03 8.803699E+01	1.728946E+03 1.728946E+03			
127	2.60000E-01 -2.60000E-01	-2.359421E+03 2.359421E+03	-8.380402E+03 8.380402E+03	2.132175E+03 -2.132175E+03	17.4030 -72.5370	-1.338101E+03 8.741722E+03	-8.741722E+03 -1.338101E+03	3.671811E+03 3.671811E+03			
128	1.20000E-01 -1.20000E-01	-3.369222E+02 3.369222E+02	-4.263803E+03 4.263803E+03	1.289837E+03 -1.289837E+03	18.7935 -71.2014	-4.946314E+02 4.722869E+03	-4.722869E+03 -4.946314E+02	2.114119E+03 2.114119E+03			

BQM-34L COMPOSITE WING FINAL ANALYSIS  
A.J.ZINDEL AERO STRUCTURES RESEARCH GROUP

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ELEMENT ID.	FIBRE DISTANCE	STRESSES IN BENDING			TRIAANGLES (CTRP L T)			PRINCIPAL STRESSES (ZERO SHEAR)			MAX SHEAR		
		NORMAL-X	NORMAL-Y	SHEAR-XY	ANGLE	MAJOR	MINOR	MAJOR	MINOR	ANGLE	MAJOR	MINOR	ANGLE
129	2.100000E-01	-2.449903E+03	-7.613213E+03	2.061640E+03	19.3309	-1.727272E+03	-5.335394E+03	3.303833E+03	3.303833E+03		3.303833E+03	3.303833E+03	
	-2.100000E-01	2.449903E+03	7.613213E+03	-2.061640E+03	-19.3309	1.727272E+03	5.335394E+03	-3.303833E+03	-3.303833E+03		-3.303833E+03	-3.303833E+03	
130	1.100000E-01	-5.911113E+02	-3.848667E+03	1.090611E+03	16.9029	-2.596975E+02	-4.180078E+03	1.960190E+03	1.960190E+03		1.960190E+03	1.960190E+03	
	-1.100000E-01	5.911113E+02	3.848667E+03	-1.090611E+03	-16.9029	2.596975E+02	4.180078E+03	-1.960190E+03	-1.960190E+03		-1.960190E+03	-1.960190E+03	
131	1.900000E-01	-1.795143E+03	-6.306169E+03	1.908983E+03	18.3801	-1.160850E+03	-7.540462E+03	3.189806E+03	3.189806E+03		3.189806E+03	3.189806E+03	
	-1.900000E-01	1.795143E+03	6.306169E+03	-1.908983E+03	-18.3801	1.160850E+03	7.540462E+03	-3.189806E+03	-3.189806E+03		-3.189806E+03	-3.189806E+03	
132	1.000000E-01	-1.041084E+03	-4.745810E+03	1.352028E+03	18.0591	-6.002422E+02	-5.187652E+03	2.293795E+03	2.293795E+03		2.293795E+03	2.293795E+03	
	-1.000000E-01	1.041084E+03	4.745810E+03	-1.352028E+03	-18.0591	6.002422E+02	5.187652E+03	-2.293795E+03	-2.293795E+03		-2.293795E+03	-2.293795E+03	
133	1.700000E-01	-1.972438E+03	-6.014653E+03	2.115940E+03	23.1556	-1.007443E+03	-6.919198E+03	2.926106E+03	2.926106E+03		2.926106E+03	2.926106E+03	
	-1.700000E-01	1.972438E+03	6.014653E+03	-2.115940E+03	-23.1556	1.007443E+03	6.919198E+03	-2.926106E+03	-2.926106E+03		-2.926106E+03	-2.926106E+03	
134	9.000000E-02	-1.157651E+03	-3.897902E+03	1.350089E+03	23.6743	-5.741420E+02	-4.281410E+03	1.853034E+03	1.853034E+03		1.853034E+03	1.853034E+03	
	-9.000000E-02	1.157651E+03	3.897902E+03	-1.350089E+03	-23.6743	5.741420E+02	4.281410E+03	-1.853034E+03	-1.853034E+03		-1.853034E+03	-1.853034E+03	
135	1.500000E-01	-1.820735E+03	-3.873564E+03	1.894326E+03	30.7748	-6.925195E+02	-5.001679E+03	2.194536E+03	2.194536E+03		2.194536E+03	2.194536E+03	
	-1.500000E-01	1.820735E+03	3.873564E+03	-1.894326E+03	-30.7748	6.925195E+02	5.001679E+03	-2.194536E+03	-2.194536E+03		-2.194536E+03	-2.194536E+03	
136	8.000000E-02	-9.103351E+02	-1.964949E+03	1.048714E+03	31.0533	-2.630249E+02	-2.011459E+03	1.173017E+03	1.173017E+03		1.173017E+03	1.173017E+03	
	-8.000000E-02	9.103351E+02	1.964949E+03	-1.048714E+03	-31.0533	2.630249E+02	2.011459E+03	-1.173017E+03	-1.173017E+03		-1.173017E+03	-1.173017E+03	
137	1.400000E-01	-1.428689E+03	-2.170997E+03	1.513239E+03	38.1037	-2.417035E+02	-3.357983E+03	1.558140E+03	1.558140E+03		1.558140E+03	1.558140E+03	
	-1.400000E-01	1.428689E+03	2.170997E+03	-1.513239E+03	-38.1037	2.417035E+02	3.357983E+03	-1.558140E+03	-1.558140E+03		-1.558140E+03	-1.558140E+03	
138	7.000000E-02	-5.858894E+02	-5.514144E+02	6.341800E+02	45.7735	6.575236E+01	-1.203096E+03	6.544142E+02	6.544142E+02		6.544142E+02	6.544142E+02	
	-7.000000E-02	5.858894E+02	5.514144E+02	-6.341800E+02	-45.7735	-6.575236E+01	1.203096E+03	-6.544142E+02	-6.544142E+02		-6.544142E+02	-6.544142E+02	
139	1.200000E-01	-6.163459E+02	-3.030373E+01	7.309720E+02	56.7001	5.092560E+02	-1.085298E+03	7.972771E+02	7.972771E+02		7.972771E+02	7.972771E+02	
	-1.200000E-01	6.163459E+02	3.030373E+01	-7.309720E+02	-56.7001	-5.092560E+02	1.085298E+03	-7.972771E+02	-7.972771E+02		-7.972771E+02	-7.972771E+02	
140	5.000000E-02	-8.712679E+01	-5.063262E+02	2.111078E+02	72.2747	5.738013E+02	-1.546099E+02	3.042056E+02	3.042056E+02		3.042056E+02	3.042056E+02	
	-5.000000E-02	8.712679E+01	5.063262E+02	-2.111078E+02	-72.2747	-5.738013E+02	1.546099E+02	-3.042056E+02	-3.042056E+02		-3.042056E+02	-3.042056E+02	
141	1.000000E-01	-1.278809E+02	-5.898452E+02	3.494214E+02	67.0619	7.318594E+02	-2.698951E+02	5.003772E+02	5.003772E+02		5.003772E+02	5.003772E+02	
	-1.000000E-01	1.278809E+02	5.898452E+02	-3.494214E+02	-67.0619	-7.318594E+02	2.698951E+02	-5.003772E+02	-5.003772E+02		-5.003772E+02	-5.003772E+02	
142	5.000000E-02	9.190699E+01	-2.742685E+02	1.792532E+02	58.4774	3.842103E+02	-1.798285E+01	2.010906E+02	2.010906E+02		2.010906E+02	2.010906E+02	
	-5.000000E-02	-9.190699E+01	2.742685E+02	-1.792532E+02	-58.4774	-3.842103E+02	1.798285E+01	-2.010906E+02	-2.010906E+02		-2.010906E+02	-2.010906E+02	
693	7.000000E-01	-1.053427E+04	-1.301297E+04	9.637829E+03	41.3249	-2.000190E+03	-2.146106E+04	9.687433E+03	9.687433E+03		9.687433E+03	9.687433E+03	
	-7.000000E-01	1.053427E+04	1.301297E+04	-9.637829E+03	-41.3249	2.000190E+03	2.146106E+04	-9.687433E+03	-9.687433E+03		-9.687433E+03	-9.687433E+03	
700	7.300000E-01	-8.446906E+03	-1.185151E+04	3.679349E+03	35.4630	-1.910092E+03	-2.032206E+04	9.205999E+03	9.205999E+03		9.205999E+03	9.205999E+03	
	-7.300000E-01	8.446906E+03	1.185151E+04	-3.679349E+03	-35.4630	1.910092E+03	2.032206E+04	-9.205999E+03	-9.205999E+03		-9.205999E+03	-9.205999E+03	

BQM-34E COMPOSITE WING FINAL ANALYSIS  
A.J. LINCOLL AERO STRUCTURES RESEARCH GROUP

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ELEMENT ID.	FIBRE DISTANCE	STRESSES IN BENDING		STRESSES IN ELEMENT COORD SYSTEM		PRINCIPAL STRESSES (ZERO SHEAR)		MAX SHEAR
		NORMAL-X	NORMAL-Y	SHEAR-XY	ANGLE	MAJOR	MINOR	
890	8.10000E-01	-3.314650E+03	-2.313861E+04	1.195124E+04	25.5533	1.800997E+03	-2.890434E+04	1.535267E+04
	-3.10000E-01	3.314650E+03	2.313861E+04	-1.195124E+04	-64.4437	2.890434E+04	-1.800997E+03	1.535267E+04
900	7.900000E-01	-6.488377E+03	-1.502324E+04	7.473940E+03	30.1372	-2.149459E+03	-1.900216E+04	8.600359E+03
	-7.900000E-01	6.488377E+03	1.502324E+04	-7.473940E+03	-59.0628	1.935216E+04	2.149459E+03	8.600359E+03
910	7.400000E-01	-7.734240E+03	-1.419114E+04	7.493807E+03	33.3405	-2.802981E+03	-1.912240E+04	8.159711E+03
	-7.400000E-01	7.734240E+03	1.419114E+04	-7.493807E+03	-56.0535	1.912240E+04	2.802981E+03	8.159711E+03
920	6.200000E-01	-6.052091E+03	-1.457575E+04	7.236850E+03	29.7529	-1.915334E+03	-1.871245E+04	8.398538E+03
	-6.200000E-01	6.052091E+03	1.457575E+04	-7.236850E+03	-60.2471	1.871245E+04	1.915334E+03	8.398538E+03
1070	7.300000E-01	-3.357624E+03	-8.052840E+03	6.051804E+03	35.0535	3.836455E+02	-1.239411E+04	6.380878E+03
	-7.300000E-01	3.357624E+03	8.052840E+03	-6.051804E+03	-54.3455	1.239411E+04	3.836455E+02	6.380878E+03
1090	5.400000E-01	-1.261149E+03	-1.017612E+04	2.420051E+03	9.0193	-8.755482E+02	-1.650102E+04	7.842498E+03
	-5.400000E-01	1.261149E+03	1.017612E+04	-2.420051E+03	-80.9337	1.650102E+04	8.755482E+02	7.842498E+03

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BK4-34E COMPOSITE WING FINAL ANALYSIS  
A.J.ZINDEL AERO STRUCTURES RESEARCH GROUP

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ELEMENT NO.	FIBRE DISTANCE	STRESSES IN 3 ELEM D I N S		Q U A J R I L A T E K A - S		P R I N C I P A L S T R E S S E S ( Z E R O S H E A R )		( C Q J P L I )		MAX SHEAR
		NORMAL-X	NORMAL-Y	SHEAR-XY	ANGLE	MAJJK	MINJK	MAJJK	MINJK	
151	8.100000E-01 -9.100000E-01	-3.308791E+02 3.308791E+02	-7.035414E+03 7.035414E+03	2.594033E+02 -2.594033E+02	2.2124 -87.7876	-3.208570E+02 7.045435E+03	-7.045435E+03 3.208570E+02	3.362289E+03 3.362289E+03		
152	8.100000E-01 -8.100000E-01	-3.333084E+02 3.333084E+02	-5.225285E+03 5.225285E+03	7.421741E+02 -7.421741E+02	8.4379 -81.5021	-2.232117E+02 5.336383E+03	-5.336383E+03 2.232117E+02	2.555555E+03 2.555555E+03		
153	8.100000E-01 -8.100000E-01	-1.033527E+03 1.033527E+03	-1.452011E+04 1.452011E+04	4.600115E+02 -4.600115E+02	1.9735 -88.5235	-1.017398E+03 1.453024E+04	-1.453024E+04 1.017398E+03	6.759420E+03 6.759420E+03		
154	8.100000E-01 -8.100000E-01	-9.140827E+02 9.140827E+02	-1.151069E+04 1.151069E+04	1.313623E+03 -1.313623E+03	6.9024 -83.0376	-7.536651E+02 1.107110E+04	-1.107110E+04 7.536651E+02	5.450719E+03 5.450719E+03		
155	8.100000E-01 -8.100000E-01	-1.707725E+03 1.707725E+03	-2.429137E+04 2.429137E+04	4.946850E+02 -4.946850E+02	1.2576 -88.7424	-1.756856E+03 2.4430223E+04	-2.4430223E+04 1.756856E+03	1.127268E+04 1.127268E+04		
156	8.100000E-01 -8.100000E-01	-1.463674E+03 1.463674E+03	-1.996448E+04 1.996448E+04	1.447133E+03 -1.447133E+03	4.4450 -85.5544	-1.351103E+03 2.007699E+04	-2.007699E+04 1.351103E+03	9.362915E+03 9.362915E+03		
157	8.100000E-01 -8.100000E-01	-2.297787E+03 2.297787E+03	-3.138353E+04 3.138353E+04	3.952944E+02 -3.952944E+02	.7785 -89.2215	-2.292410E+03 3.138353E+04	-3.138353E+04 2.292410E+03	1.454324E+04 1.454324E+04		
158	8.100000E-01 -8.100000E-01	-1.848281E+03 1.848281E+03	-2.735144E+04 2.735144E+04	1.345001E+03 -1.345001E+03	3.0137 -86.9893	-1.777538E+03 2.742218E+04	-2.742218E+04 1.777538E+03	1.232232E+04 1.232232E+04		
159	8.100000E-01 -8.100000E-01	-1.510649E+03 1.510649E+03	-3.173123E+04 3.173123E+04	1.368138E+03 -1.368138E+03	2.5658 -87.4132	-1.448837E+03 3.173123E+04	-3.173123E+04 1.448837E+03	1.517210E+04 1.517210E+04		
160	8.100000E-01 -8.100000E-01	-4.965412E+03 4.965412E+03	-3.418922E+04 3.418922E+04	5.834456E+03 -5.834456E+03	10.8833 -79.1157	-3.843639E+03 3.531039E+04	-3.531039E+04 3.843639E+03	1.574368E+04 1.574368E+04		

ELEMENT ID.	STRESSES IN BARELEMENTS				(J A R)		M.S.-I M.S.-C	
	SAL SB1	SAL SB2	SAL SB3	SAL SB4	SA-MAX SB-MAX	SA-MIN SB-MIN		
201	-3.3445E+03 -3.4033E+03	3.3445E+03 3.4033E+03	-3.2953E+03 -3.3508E+03	3.2953E+03 3.3508E+03	3.3445E+03 3.4033E+03	-3.3445E+03 -3.4033E+03		
202	-3.6753E+03 -4.1773E+03	3.6753E+03 4.1773E+03	-3.6753E+03 -4.1773E+03	3.6753E+03 4.1773E+03	3.6753E+03 4.1773E+03	-3.6753E+03 -4.1773E+03		
203	-3.3143E+02 -3.3973E+02	3.3143E+02 3.3973E+02	-3.3143E+02 -3.3973E+02	3.3143E+02 3.3973E+02	3.3143E+02 3.3973E+02	-3.3143E+02 -3.3973E+02		
204	-4.7308E+02 -4.3539E+02	4.7308E+02 4.3539E+02	-4.7308E+02 -4.3539E+02	4.7308E+02 4.3539E+02	4.7308E+02 4.3539E+02	-4.7308E+02 -4.3539E+02		
205	-3.4852E+02 -2.4167E+02	3.4852E+02 2.4167E+02	-3.4852E+02 -2.4167E+02	3.4852E+02 2.4167E+02	3.4852E+02 2.4167E+02	-3.4852E+02 -2.4167E+02		
211	-8.6696E+01 5.8630E+02	8.6696E+01 5.8630E+02	-8.6696E+01 5.8630E+02	8.6696E+01 5.8630E+02	8.6696E+01 5.8630E+02	-8.6696E+01 -5.8630E+02		
212	-1.7383E+02 5.8963E+02	1.7383E+02 5.8963E+02	-1.7383E+02 5.8963E+02	1.7383E+02 5.8963E+02	1.7383E+02 5.8963E+02	-1.7383E+02 -5.8963E+02		
213	-9.7311E+02 9.6693E+02	9.7311E+02 9.6693E+02	-9.7311E+02 9.6693E+02	9.7311E+02 9.6693E+02	9.7311E+02 9.6693E+02	-9.7311E+02 -9.6693E+02		
214	-3.1433E+02 6.1661E+02	3.1433E+02 6.1661E+02	-3.1433E+02 6.1661E+02	3.1433E+02 6.1661E+02	3.1433E+02 6.1661E+02	-3.1433E+02 -6.1661E+02		
215	-4.6457E+02 3.9382E+02	4.6457E+02 3.9382E+02	-4.6457E+02 3.9382E+02	4.6457E+02 3.9382E+02	4.6457E+02 3.9382E+02	-4.6457E+02 -3.9382E+02		
221	2.0376E+02 1.5243E+03	2.0376E+02 1.5243E+03	2.0376E+02 1.5243E+03	2.0376E+02 1.5243E+03	2.0376E+02 1.5243E+03	-2.0376E+02 -1.5243E+03		
222	1.7587E+02 1.0631E+02	1.7587E+02 1.0631E+02	1.7587E+02 1.0631E+02	1.7587E+02 1.0631E+02	1.7587E+02 1.0631E+02	-1.7587E+02 -1.0631E+02		
223	-3.9687E+01 -1.5740E+01	3.9687E+01 1.5740E+01	-3.9687E+01 1.5740E+01	3.9687E+01 1.5740E+01	3.9687E+01 1.5740E+01	-3.9687E+01 -1.5740E+01		
224	-4.8521E+02 1.4451E+02	4.8521E+02 1.4451E+02	-4.8521E+02 1.4451E+02	4.8521E+02 1.4451E+02	4.8521E+02 1.4451E+02	-4.8521E+02 -1.4451E+02		
231	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0		
232	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0		

UC4-34E COMPOSITE WING FINAL ANALYSIS  
A.J.ZINDEL AERO STRUCTURES RESEARCH GROUP

APRIL 18, 1973 NASIRAN 6/15/72 PAGE 37

ELEMENT ID.	STRESSES IN BAR ELEMENTS				(C B A R)		M.S.-T M.S.-C
	SA1 SB1	SA2 SB2	SA3 SB3	SA4 SB4	SA-YAX SB-YAX	SA-MIN SB-MIN	
233	3.0 3.0	0.0 3.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	
234	0.0 3.0	0.0 0.0	0.0 3.0	0.0 0.0	0.0 0.0	0.0 0.0	
235	3.0 3.0	0.0 0.0	3.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	
236	0.0 0.0	0.0 3.0	0.0 0.0	0.0 0.0	0.0 0.0	0.0 0.0	

A P P E N D I X   C

NASTRAN VIBRATION ANALYSIS OUTPUT DATA

NADC-73235-30

FITCFNVALUE = 1.609216L+04

## REAL FIGURE NO. 1

POINT NO.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	2.40688E-05	-6.35472E-05	-5.58904E-05	0.0
2	G	0.0	0.0	2.46285E-04	-7.25032E-05	-3.69946E-05	0.0
3	G	0.0	0.0	2.14113E-04	-2.67473E-04	7.70004E-07	0.0
4	G	0.0	0.0	-1.65572E-03	-7.41492E-04	5.79050E-04	0.0
5	G	0.0	0.0	-1.24144E-02	-1.42147E-03	2.01674E-07	0.0
6	G	0.0	0.0	-4.12420E-02	-2.15031E-03	4.78326E-03	0.0
7	G	0.0	0.0	-9.45949E-03	-7.04151E-07	8.24577E-03	0.0
8	G	0.0	0.0	-1.89902E-01	-3.33541E-03	1.44457E-02	0.0
9	G	0.0	0.0	-3.47379E-01	-7.37302E-03	2.26480E-02	0.0
10	G	0.0	0.0	-5.51940E-01	-3.04124E-03	3.11160E-02	0.0
11	G	0.0	0.0	-4.04027E-05	3.23280E-05	0.0	0.0
12	G	0.0	0.0	-3.74044E-05	2.48294E-05	-1.65350E-05	0.0
13	G	0.0	0.0	0.0	7.31245E-06	-9.81703E-06	0.0
14	G	0.0	0.0	-4.11030E-05	-6.37432E-05	5.41736E-05	0.0
15	G	0.0	0.0	-1.59220E-07	-3.41523E-04	4.76326E-04	0.0
16	G	0.0	0.0	-8.60145E-03	-7.44210E-04	1.44627E-03	0.0
17	G	0.0	0.0	-2.74392E-02	-1.21545E-03	3.20748E-03	0.0
18	G	0.0	0.0	-5.44477E-02	-1.73954E-07	6.10607E-03	0.0
19	G	0.0	0.0	-1.29343E-01	-2.44811E-03	1.01591E-02	0.0
20	G	0.0	0.0	-2.39180E-01	-2.79092E-07	1.72961E-02	0.0
21	G	0.0	0.0	-4.05047E-01	-2.45097E-07	2.46740E-02	0.0
22	G	0.0	0.0	-6.11373E-01	-1.27934E-07	3.11142E-02	0.0
23	G	0.0	0.0	6.01313E-04	8.13840E-05	0.0	0.0
24	G	0.0	0.0	4.72464E-04	5.34441E-05	6.46455E-05	0.0
25	G	0.0	0.0	0.0	-2.52651E-05	9.16447E-05	0.0
26	G	0.0	0.0	-1.35228E-03	-3.46427E-05	4.32154E-04	0.0
27	G	0.0	0.0	-6.80152E-07	-2.76059E-04	1.20375E-03	0.0
28	G	0.0	0.0	-2.07373E-02	-4.21633E-04	2.58268E-03	0.0
29	G	0.0	0.0	-4.73636E-02	-6.46874E-04	4.83465E-03	0.0
30	G	0.0	0.0	-9.63639E-02	-9.28779E-04	8.17675E-03	0.0
31	G	0.0	0.0	-1.74715E-01	-1.35145E-07	1.27452E-02	0.0
32	G	0.0	0.0	-2.95840E-01	-1.12631E-03	1.99933E-02	0.0
33	G	0.0	0.0	-4.72429E-01	-8.39433E-04	2.69915E-02	0.0
34	G	0.0	0.0	-6.73764E-01	5.20702E-04	3.10667E-02	0.0
35	G	0.0	0.0	2.25843E-03	1.51870E-04	0.0	0.0
36	G	0.0	0.0	1.05301E-07	9.22437E-05	2.56663E-04	0.0
37	G	0.0	0.0	0.0	-9.35473E-06	4.76413E-04	0.0
38	G	0.0	0.0	-4.77633E-03	2.85074E-04	1.01034E-03	0.0
39	G	0.0	0.0	-1.48015E-02	1.75920E-04	2.00708E-03	0.0
40	G	0.0	0.0	-3.58238E-02	2.57297E-04	3.09339E-03	0.0
41	G	0.0	0.0	-7.27605E-02	3.00406E-04	5.55503E-03	0.0
42	G	0.0	0.0	-1.72442E-01	2.59236E-04	1.34473E-02	0.0
43	G	0.0	0.0	-2.23431E-01	1.39570E-04	1.54897E-02	0.0
44	G	0.0	0.0	-3.58449E-01	5.24073E-04	2.04044E-02	0.0
45	G	0.0	0.0	-5.40599E-01	5.20352E-04	2.89206E-02	0.0
46	G	0.0	0.0	-7.79060E-01	4.79413E-04	3.22155E-02	0.0
47	G	0.0	0.0	4.83947E-03	2.05690E-04	0.0	0.0
48	G	0.0	0.0	3.50370E-03	1.28642E-04	5.46555E-04	0.0
49	G	0.0	0.0	0.0	-1.04737E-04	9.33045E-04	0.0
50	G	0.0	0.0	-2.21716E-03	1.00249E-03	1.30102E-03	0.0

NADC-73235-30

FITNESS VALUE = 1.6792100E+4

## REAL EIGENVECTORS NO.

1

POINT ID.	TYPE	T1	T2	T3	O1	O2	R3
51	G	0.0	0.0	-2.50452E-02	1.044294E-03	7.129785E-07	0.0
52	G	0.0	0.0	-5.374968E-02	1.749743E-03	5.734120E-03	0.0
53	G	0.0	0.0	-1.05810E-01	1.651571E-07	9.490571E-03	0.0
54	G	0.0	0.0	-1.72257E-01	1.859485E-03	1.282445E-02	0.0
55	G	0.0	0.0	-2.765920E-01	1.935237E-07	1.950014E-02	0.0
56	G	0.0	0.0	-4.272445E-01	2.108139E-03	2.573679E-02	0.0
57	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
58	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
59	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
60	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
61	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
62	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
63	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
64	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
65	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
66	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
67	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
68	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
69	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
70	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
71	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
72	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
73	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
74	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
75	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
76	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
77	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
78	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
79	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
80	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
81	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
82	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
83	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
84	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
85	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
86	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
87	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
88	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
89	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
90	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
91	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
92	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
93	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
94	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
95	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
96	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
97	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
98	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
99	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
100	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
101	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
102	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
103	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
104	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
105	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
106	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
107	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
108	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
109	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
110	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
111	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
112	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
113	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
114	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
115	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
116	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
117	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
118	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
119	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0
120	G	0.0	0.0	-8.03307E-01	1.615554E-03	3.273847E-02	0.0

FINAL VIBRATION MODES ANALYSTS

EIGENVALUE = 1.832874E+05

REAL EIGENVECTORS

POINT NO.	TYPE	T1	T2	T3	Q1	R2	R3
1	G	7.0	7.0	-2.337938E-07	4.587J55E-04	-2.261340E-04	0.0
2	G	9.0	9.0	5.619777E-04	2.31391E-04	-3.247045E-04	0.0
3	G	7.0	7.0	6.754257E-03	0.37775E-04	-1.46005E-03	0.0
4	G	0.0	0.0	3.110797E-02	0.554472E-04	-4.62888E-03	0.0
5	G	7.0	7.0	9.020034E-02	1.53996E-04	-9.77377E-03	0.0
6	G	7.0	7.0	1.051032E-01	-2.667834E-03	-1.546795E-02	0.0
7	G	7.0	7.0	3.715987E-01	-9.59925E-03	-1.92075E-02	0.0
8	G	7.0	7.0	4.873212E-01	-1.02619E-02	-1.50376E-02	0.0
9	G	7.0	7.0	2.245044E-01	-3.178165E-02	0.460765E-03	0.0
10	G	7.0	7.0	0.542732E-01	-3.915375E-02	3.41485E-02	0.0
11	G	7.0	7.0	-1.575710E-03	-1.817125E-04	0.0	0.0
12	G	7.0	7.0	-1.175239E-03	-1.00457E-04	-1.702647E-04	0.0
13	G	7.0	7.0	0.0	4.32031E-05	-2.756095E-04	0.0
14	G	7.0	7.0	3.692245E-03	-2.735395E-05	-1.726138E-07	0.0
15	G	7.0	7.0	1.852210E-02	3.21793E-04	-3.59516E-03	0.0
16	G	7.0	7.0	5.579392E-02	-1.676159E-04	-6.484366E-07	0.0
17	G	7.0	7.0	1.271965E-01	-1.446371E-07	-1.133117E-02	0.0
18	G	7.0	7.0	2.354174E-01	-5.11135E-03	-1.563557E-05	0.0
19	G	7.0	7.0	3.648656E-01	-1.09887E-02	-1.598249E-02	0.0
20	G	7.0	7.0	4.693112E-01	-2.150694E-02	-9.522511E-03	0.0
21	G	7.0	7.0	4.415054E-01	-2.908522E-02	1.272925E-02	0.0
22	G	7.0	7.0	2.143732E-01	-3.754725E-02	4.497042E-02	0.0
23	G	7.0	7.0	-5.00974E-03	-3.547321E-04	0.0	0.0
24	G	7.0	7.0	-3.672232E-07	-2.104693E-04	-5.546564E-04	0.0
25	G	7.0	7.0	0.0	1.08894E-04	-9.648380E-04	0.0
26	G	7.0	7.0	1.079875E-02	-7.72970E-04	-2.36999E-03	0.0
27	G	7.0	7.0	3.62879E-02	-9.46750E-04	-4.79793E-03	0.0
28	G	7.0	7.0	8.551978E-02	-7.26439E-03	-9.475387E-03	0.0
29	G	7.0	7.0	1.655035E-01	-4.365175E-07	-1.24427E-02	0.0
30	G	7.0	7.0	2.698350E-01	-7.76607E-03	-1.484167E-02	0.0
31	G	7.0	7.0	3.745673E-01	-1.325595E-02	-1.261417E-02	0.0
32	G	7.0	7.0	4.22070E-01	-7.94527E-02	7.147184E-04	0.0
33	G	7.0	7.0	7.23752E-01	-2.968893E-02	7.20894E-02	0.0
34	G	7.0	7.0	3.97517E-02	-3.490724E-02	5.716927E-02	0.0
35	G	7.0	7.0	-1.06790E-02	-4.30704E-04	0.0	0.0
36	G	7.0	7.0	-7.03037E-03	-2.46747E-04	-1.247705E-03	0.0
37	G	7.0	7.0	0.0	2.841578E-04	-2.240935E-03	0.0
38	G	7.0	7.0	1.879389E-02	-2.196399E-03	-7.66795E-03	0.0
39	G	7.0	7.0	5.451045E-02	-2.674897E-03	-6.36776E-03	0.0
40	G	7.0	7.0	1.141170E-01	-4.163719E-03	-9.900720E-03	0.0
41	G	7.0	7.0	1.971921E-01	-6.163188E-03	-1.258423E-02	0.0
42	G	7.0	7.0	2.900729E-01	-3.029111E-03	-1.252722E-02	0.0
43	G	7.0	7.0	3.61376E-01	-1.316945E-02	-6.325933E-07	0.0
44	G	7.0	7.0	3.430269E-01	-1.379755E-02	1.213447E-02	0.0
45	G	7.0	7.0	1.732050E-01	-2.85812E-02	3.923844E-02	0.0
46	G	7.0	7.0	-1.473675E-01	-3.07399E-02	5.99771E-02	0.0
47	G	7.0	7.0	-1.682336E-02	-4.53399E-04	0.0	0.0
48	G	7.0	7.0	-1.246596E-02	-2.87251E-04	-1.925896E-07	0.0
49	G	7.0	7.0	0.0	2.28571E-04	-3.220345E-03	0.0
50	G	7.0	7.0	1.63715E-02	-0.313999E-07	-4.403230E-03	0.0

NADC-73235-30

LI ENVALUE = 1.835834L+5

POINT NO.	TYPE	T1	T2	T3	R1	R2	R3
51	G	0.0	0.0	7.495825E-02	-4.241519E-03	-8.012070E-03	0.0
52	G	0.0	0.0	1.409997E-01	-5.394392E-03	-1.086360E-02	0.0
53	G	0.0	0.0	2.223268E-01	-6.587653E-03	-1.196446E-02	0.0
54	G	0.0	0.0	2.739490E-01	-8.126989E-03	-8.723950E-03	0.0
55	G	0.0	0.0	7.200056E-01	-1.073454E-02	2.320675E-03	0.0
56	G	0.0	0.0	2.451045E-01	-1.597791E-02	2.442725E-02	0.0
57	G	0.0	0.0	4.591256E-01	-2.515700E-02	5.164830E-02	0.0
58	G	0.0	0.0	-3.453820E-01	-3.090707E-02	6.357643E-02	0.0
59	G	0.0	0.0	-2.055839E-02	-7.321753E-04	0.0	0.0
60	G	0.0	0.0	-1.547521E-02	-5.712305E-04	-2.076073E-03	0.0
61	G	0.0	0.0	0.0	2.025949E-04	-4.957507E-03	0.0
62	G	0.0	0.0	2.007934E-02	-4.046184E-03	-5.401077E-03	0.0
63	G	0.0	0.0	9.215241E-02	-4.068783E-03	-9.269224E-03	0.0
64	G	0.0	0.0	1.060213E-01	-5.380038E-03	-1.161884E-02	0.0
65	G	0.0	0.0	2.413496E-01	-5.167139E-03	-1.089417E-02	0.0
66	G	0.0	0.0	2.957010E-01	-4.380139E-03	-4.309445E-03	0.0
67	G	0.0	0.0	2.899633E-01	-6.355109E-03	1.196153E-02	0.0
68	G	0.0	0.0	1.399762E-01	-1.085735E-02	7.507532E-02	0.0
69	G	0.0	0.0	-1.572348E-01	-2.070232E-02	6.165852E-02	0.0
70	G	0.0	0.0	-5.170186E-01	-3.23502E-02	6.897650E-02	0.0
71	G	0.0	0.0	2.127624E-02	-4.944043E-03	-6.717363E-03	0.0
72	G	0.0	0.0	5.196070E-02	2.380933E-03	-9.097575E-03	0.0
73	G	0.0	0.0	1.168452E-01	-5.01275E-03	-1.120097E-02	0.0
74	G	0.0	0.0	1.948906E-01	-3.659963E-03	-1.256007E-02	0.0
75	G	0.0	0.0	2.663610E-01	-1.126144E-03	-0.399789E-03	0.0
76	G	0.0	0.0	2.977100E-01	1.534695E-03	1.772700E-03	0.0
77	G	0.0	0.0	2.022174E-01	1.545274E-03	2.200704E-02	0.0
78	G	0.0	0.0	1.209325E-02	-4.577451E-03	5.02567F-02	0.0
79	G	0.0	0.0	-3.336506E-01	-1.575421E-02	6.980048E-02	0.0
80	G	0.0	0.0	-7.679890E-01	-2.437339E-02	7.914667E-02	0.0
81	G	0.0	0.0	6.623249E-02	-2.550722E-03	-1.116106E-02	0.0
82	G	0.0	0.0	1.060436E-01	-3.741309E-03	-1.422435E-02	0.0
83	G	0.0	0.0	2.017854E-01	-0.210425E-04	-1.937270E-02	0.0
84	G	0.0	0.0	2.908730E-01	4.837431E-03	-1.735897E-02	0.0
85	G	0.0	0.0	3.571206E-01	1.524950E-02	-9.303379E-03	0.0
86	G	0.0	0.0	3.031037E-01	2.232700E-02	1.535796E-02	0.0
87	G	0.0	0.0	1.069307E-01	1.917036E-02	4.563732E-02	0.0
88	G	0.0	0.0	-2.420757E-01	1.545853E-03	7.250017E-02	0.0
89	G	0.0	0.0	-7.742329E-01	-1.636751E-02	8.035294E-02	0.0
90	G	0.0	0.0	-1.891326E-02	-3.649789E-04	0.0	0.0
91	G	0.0	0.0	-1.472477E-02	-1.716476E-03	-1.394785E-03	0.0
92	G	0.0	0.0	3.250576E-04	-2.791251E-03	-7.104000E-03	0.0
93	G	0.0	0.0	3.776496E-04	4.49324E-04	-6.332264E-03	0.0
94	G	0.0	0.0	3.506307E-02	-3.240501E-03	-5.258512E-03	0.0
95	G	0.0	0.0	4.708976E-02	1.580794E-03	-7.265545E-03	0.0
96	G	0.0	0.0	5.153362E-02	-4.773527E-03	-7.425490E-03	0.0
97	G	0.0	0.0	-1.000000E+00	-4.436491E-02	5.891329E-02	0.0
98	G	0.0	0.0	-5.417486E-01	-4.312970E-02	6.769209E-02	0.0
99	G	0.0	0.0	7.442079E-01	-3.315599E-02	6.041550E-02	0.0
100	G	0.0	0.0	6.615702E-01	-3.396020E-02	6.041550E-02	0.0



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LIGNVALUE = 2.09475E+05

## REFLECTION FACTOR NO.

3

POINT	TD	TYPE	T1	T2	T3	R1	R2	R3
1	1	G	0.0	0.0	-2.119327E-03	-2.119327E-04	4.049400E-04	0.0
2	2	G	0.0	0.0	-1.777795E-07	-1.844394E-05	4.197160E-04	0.0
3	3	G	0.0	0.0	-0.021109E-03	2.356337E-04	1.324297E-03	0.0
4	4	G	0.0	0.0	-2.343609E-02	1.376196E-05	2.343774E-03	0.0
5	5	G	0.0	0.0	-4.333314E-12	3.737257E-07	2.674567E-03	0.0
6	6	G	0.0	0.0	-5.244454E-02	7.118750E-03	3.120007E-03	0.0
7	7	G	0.0	0.0	-8.927245E-02	1.235937E-02	5.606140E-03	0.0
8	8	G	0.0	0.0	-1.514564E-01	2.206135E-02	1.252454E-02	0.0
9	9	G	0.0	0.0	-3.011924E-01	3.815572E-02	2.507707E-02	0.0
10	10	G	0.0	0.0	-4.943785E-01	5.562406E-02	3.376423E-02	0.0
11	11	G	0.0	0.0	-1.534710E-03	7.176191E-05	0.0	0.0
12	12	G	0.0	0.0	1.192148E-07	4.026432E-05	1.768671E-04	0.0
13	13	G	0.0	0.0	0.0	-2.593183E-05	2.979011E-04	0.0
14	14	G	0.0	0.0	-3.320551E-03	2.498512E-04	7.590216E-04	0.0
15	15	G	0.0	0.0	-1.232324E-12	7.872733E-04	1.318277E-03	0.0
16	16	G	0.0	0.0	-2.438237E-02	2.408321E-03	1.420040E-03	0.0
17	17	G	0.0	0.0	-3.511281E-03	5.322920E-03	1.274111E-03	0.0
18	18	G	0.0	0.0	-4.435675E-02	9.571454E-03	1.911502E-03	0.0
19	19	G	0.0	0.0	-6.403742E-02	1.599727E-02	5.084574E-03	0.0
20	20	G	0.0	0.0	-1.712205E-01	2.304359E-02	1.524413E-02	0.0
21	21	G	0.0	0.0	-2.605530E-01	4.472135E-02	2.525784E-02	0.0
22	22	G	0.0	0.0	-4.427797E-01	6.642777E-02	2.708152E-02	0.0
23	23	G	0.0	0.0	2.821469E-03	7.274061E-05	0.0	0.0
24	24	G	0.0	0.0	2.091670E-03	2.756761E-05	3.200333E-04	0.0
25	25	G	0.0	0.0	0.0	-1.011157E-04	6.128594E-04	0.0
26	26	G	0.0	0.0	-5.415211E-03	8.489845E-04	7.964870E-04	0.0
27	27	G	0.0	0.0	-1.102057E-02	1.324913E-03	5.092084E-04	0.0
28	28	G	0.0	0.0	-1.475239E-02	4.002040E-03	-1.515558E-04	0.0
29	29	G	0.0	0.0	-1.030785E-02	7.789614E-03	-6.347462E-04	0.0
30	30	G	0.0	0.0	-2.320357E-03	1.362497E-02	2.125437E-04	0.0
31	31	G	0.0	0.0	-1.829045E-02	2.255773E-02	7.897092E-03	0.0
32	32	G	0.0	0.0	-7.034707E-02	3.800274E-02	1.428606E-02	0.0
33	33	G	0.0	0.0	-7.076015E-01	5.669075E-02	2.218586E-02	0.0
34	34	G	0.0	0.0	-7.442560E-01	7.823501E-02	1.510644E-02	0.0
35	35	G	0.0	0.0	1.972000E-03	-2.876492E-04	0.0	0.0
36	36	G	0.0	0.0	1.226221E-03	-1.720284E-04	2.823947E-04	0.0
37	37	G	0.0	0.0	0.0	1.311671E-04	5.918034E-04	0.0
38	38	G	0.0	0.0	-2.640712E-03	1.379873E-03	-4.267217E-03	0.0
39	39	G	0.0	0.0	4.931855E-14	6.885038E-03	-1.439124E-03	0.0
40	40	G	0.0	0.0	1.474220E-02	5.976247E-03	-2.847036E-03	0.0
41	41	G	0.0	0.0	3.524281E-02	1.096730E-02	-3.713116E-03	0.0
42	42	G	0.0	0.0	5.580441E-03	1.389275E-02	-2.760156E-03	0.0
43	43	G	0.0	0.0	5.711055E-02	3.031741E-02	1.481691E-03	0.0
44	44	G	0.0	0.0	4.457580E-07	4.820793E-02	1.123234E-02	0.0
45	45	G	0.0	0.0	-1.111340E-01	6.079139E-02	1.597152E-02	0.0
46	46	G	0.0	0.0	-2.180434E-01	7.068530E-02	4.444137E-02	0.0
47	47	G	0.0	0.0	-4.200225E-03	-6.251365E-04	0.0	0.0
48	48	G	0.0	0.0	-3.109155E-03	-4.629775E-04	-5.012407E-04	0.0
49	49	G	0.0	0.0	0.0	2.180392E-05	-2.62721E-03	0.0
50	50	G	0.0	0.0	0.0	0.0	0.0	0.0

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EIGENVALUE = 2.894752E+05

POINT ID.	TYPE	T1	T2	T3	R1	R2	P1
51	G	3.0	3.059013E-02	3.470518E-03	-4.785407E-03	0.0	0.0
52	G	0.0	6.724008E-02	8.046446E-03	-6.857210E-03	0.0	0.0
53	G	0.0	1.135930E-01	1.531205E-02	-8.310494E-03	0.0	0.0
54	G	0.0	1.560072E-01	2.626832E-02	-7.457679E-03	0.0	0.0
55	G	0.0	1.713579E-01	3.939245E-02	-2.181165E-03	0.0	0.0
56	G	0.0	1.265590E-01	5.747739E-02	7.387154E-03	0.0	0.0
57	G	0.0	2.450075E-02	7.292455E-02	1.102870E-02	0.0	0.0
58	G	0.0	-8.573242E-02	8.125358E-02	1.240641E-02	0.0	0.0
59	G	0.0	-0.900635E-02	-9.240637E-05	0.0	0.0	0.0
60	G	0.0	-5.255047E-03	1.397652E-04	-8.588905E-04	0.0	0.0
61	G	0.0	0.0	1.366335E-03	-2.234900E-03	0.0	0.0
62	G	0.0	4.599304E-02	-1.239391E-04	-4.465587E-03	0.0	0.0
63	G	0.0	7.639984E-02	4.686504E-02	-9.018022E-03	0.0	0.0
64	G	0.0	1.411570E-01	1.081594E-02	-1.264705E-02	0.0	0.0
65	G	0.0	2.150431E-01	2.062875E-02	-1.441858E-02	0.0	0.0
66	G	0.0	2.793551E-01	3.339155E-02	-1.240924E-02	0.0	0.0
67	G	0.0	3.322895E-01	4.924041E-02	-0.229456E-03	0.0	0.0
68	G	0.0	2.537075E-01	6.533612E-02	3.259071E-03	0.0	0.0
69	G	0.0	1.546417E-01	7.747291E-02	8.904607E-03	0.0	0.0
70	G	0.0	3.824422E-02	5.268733E-02	1.128887E-02	0.0	0.0
71	G	0.0	3.949187E-02	1.066049E-02	-9.379208E-03	0.0	0.0
72	G	0.0	8.267425E-02	1.000293E-02	-5.420656E-03	0.0	0.0
73	G	0.0	1.612491E-01	6.985050E-03	-1.012526E-02	0.0	0.0
74	G	0.0	2.500007E-01	1.607351E-02	-2.131050E-02	0.0	0.0
75	G	0.0	3.751125E-01	2.890831E-02	-2.261885E-02	0.0	0.0
76	G	0.0	4.601574E-01	4.523911E-02	-1.024117E-02	0.0	0.0
77	G	0.0	4.807598E-01	5.191355E-02	-1.091465E-02	0.0	0.0
78	G	0.0	4.307707E-01	7.274973E-02	-1.502326E-04	0.0	0.0
79	G	0.0	3.064591E-01	8.336304E-02	7.151339E-03	0.0	0.0
80	G	0.0	2.185260E-01	8.817253E-02	1.014873E-02	0.0	0.0
81	G	0.0	2.618920E-01	2.051197E-02	-2.226521E-02	0.0	0.0
82	G	0.0	3.142047E-01	1.652913E-02	-3.120308E-02	0.0	0.0
83	G	0.0	4.944254E-01	2.445913E-02	-4.499581E-02	0.0	0.0
84	G	0.0	5.332020E-01	4.098144E-02	-5.055333E-02	0.0	0.0
85	G	0.0	9.041270E-01	7.057816E-02	-5.457101E-02	0.0	0.0
86	G	0.0	1.030070E+00	9.065934E-02	-3.706475E-02	0.0	0.0
87	G	0.0	9.515559E-01	1.052522E-01	-1.577792E-02	0.0	0.0
88	G	0.0	7.903838E-01	9.312151E-02	1.018732E-03	0.0	0.0
89	G	0.0	5.077301E-01	9.408255E-02	7.409124E-03	0.0	0.0
90	G	0.0	-6.47238E-03	-1.590123E-05	0.0	0.0	0.0
91	G	0.0	-2.491496E-03	-4.112398E-04	-6.427809E-04	0.0	0.0
92	G	0.0	-6.445562E-04	-4.581134E-04	-1.008273E-03	0.0	0.0
93	G	0.0	6.605665E-03	2.322497E-03	-3.470936E-03	0.0	0.0
94	G	0.0	6.715233E-03	1.473117E-03	-2.182733E-03	0.0	0.0
95	G	0.0	2.062497E-02	4.052437E-03	-2.554935E-03	0.0	0.0
96	G	0.0	4.226245E-02	1.943357E-03	-6.949170E-03	0.0	0.0
97	G	0.0	3.410344E-01	8.374023E-02	9.900352E-03	0.0	0.0
98	G	0.0	1.088210E-01	8.71581E-02	1.065638E-02	0.0	0.0
99	G	0.0	-5.553902E-01	8.491174E-02	0.504948E-02	0.0	0.0
100	G	0.0	-3.115200E-01	0.631896E-02	7.331550E-03	0.0	0.0

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EIGENVALUE = 7.203555E+05

DEAL L I U F N V E C T O R N O .

4

P3

FORM ID.	TYPE	T1	T2	T3	K1	P2	P3
1	C	0.0	0.0	1.720340E-02	-2.498540F-03	2.905511F-03	0.0
2	C	0.0	0.0	-6.425442E-07	-5.955985F-04	2.378697F-03	0.0
3	C	0.0	0.0	-4.333515E-02	2.168284E-04	7.591408E-03	0.0
4	C	0.0	0.0	-1.413625E-01	4.220821E-03	1.622148E-02	0.0
5	C	0.0	0.0	-3.554919E-01	1.371951F-02	2.367764F-02	0.0
6	C	0.0	0.0	-4.515293E-01	2.684143E-02	2.731816F-02	0.0
7	C	0.0	0.0	-6.720354E-01	3.954545F-02	9.025186E-03	0.0
8	C	0.0	0.0	-4.521624E-01	4.015799F-02	2.671512F-02	0.0
9	C	0.0	0.0	-7.589574E-02	1.465652E-02	-5.658868E-02	0.0
10	C	0.0	0.0	-7.730244E-01	-2.338254E-02	-4.025474F-02	0.0
11	C	0.0	0.0	9.653146F-03	5.487374E-04	0.0	0.0
12	C	0.0	0.0	6.595371E-03	3.140698E-04	9.932240F-04	0.0
13	C	0.0	0.0	0.0	-3.712240E-04	1.671355F-03	0.0
14	C	0.0	0.0	-1.927225E-02	1.989649F-03	4.505996E-03	0.0
15	C	0.0	0.0	-7.827500E-02	2.73579F-03	1.413620E-02	0.0
16	C	0.0	0.0	-1.827844E-01	8.221955E-07	1.611484E-02	0.0
17	C	0.0	0.0	-3.314660E-01	1.754375F-02	1.959332F-02	0.0
18	C	0.0	0.0	-4.654798E-01	2.797358F-02	1.481507F-02	0.0
19	C	0.0	0.0	-5.005129E-01	3.589389E-02	-1.982135F-03	0.0
20	C	0.0	0.0	-3.211049F-01	2.736711F-02	-3.294179E-02	0.0
21	C	0.0	0.0	6.574249E-02	3.857734F-07	-2.202134F-02	0.0
22	C	0.0	0.0	0.814620E-01	-4.192240F-02	-2.03402F-02	0.0
23	C	0.0	0.0	1.953000F-02	9.531355E-04	0.0	0.0
24	C	0.0	0.0	1.446181E-02	9.482933E-04	2.211595F-07	0.0
25	C	0.0	0.0	0.0	-5.696755F-04	4.012062F-03	0.0
26	C	0.0	0.0	-3.063152E-02	4.403897E-03	7.310280F-03	0.0
27	C	0.0	0.0	-1.194773E-01	7.743529F-07	1.118456F-02	0.0
28	C	0.0	0.0	-2.112102E-01	1.357871F-02	1.447238E-02	0.0
29	C	0.0	0.0	-3.249977E-01	2.105000E-02	1.416794E-02	0.0
30	C	0.0	0.0	-3.997636E-01	2.779715F-02	2.537087F-07	0.0
31	C	0.0	0.0	-3.627316E-01	2.957411F-02	-1.249158E-02	0.0
32	C	0.0	0.0	-1.524245E-01	1.487709F-02	-3.800610F-02	0.0
33	C	0.0	0.0	1.652780F-01	-1.659335F-02	-3.777592E-02	0.0
34	C	0.0	0.0	2.937411E-01	-5.84879E-02	1.836241F-02	0.0
35	C	0.0	0.0	3.097535E-02	3.818157E-04	0.0	0.0
36	C	0.0	0.0	2.227235E-02	1.952972E-04	3.573282F-07	0.0
37	C	0.0	0.0	0.0	-3.253597F-04	6.591241F-03	0.0
38	C	0.0	0.0	-4.941688E-02	7.313060E-03	7.980017F-02	0.0
39	C	0.0	0.0	-1.201184F-01	1.114937F-02	1.019320F-02	0.0
40	C	0.0	0.0	-2.000332E-01	1.569208E-02	1.124599E-02	0.0
41	C	0.0	0.0	-2.800745E-01	2.231609F-02	7.445315E-03	0.0
42	C	0.0	0.0	-3.225218E-01	2.301435F-02	-3.132075F-03	0.0
43	C	0.0	0.0	-2.249011F-01	2.974098E-03	-1.956635E-02	0.0
44	C	0.0	0.0	-2.144511E-02	-3.087933F-02	-3.272804F-02	0.0
45	C	0.0	0.0	1.770030E-01	-6.217481F-02	-1.440281F-02	0.0
46	C	0.0	0.0	1.326850E-01	-1.675875E-04	2.510777F-02	0.0
47	C	0.0	0.0	3.157782E-02	-1.675875E-04	0.0	0.0
48	C	0.0	0.0	2.331655E-02	-2.015203E-04	7.788989E-07	0.0
49	C	0.0	0.0	0.0	-3.487622F-04	7.171924F-03	0.0
50	C	0.0	0.0	-2.579470E-02	7.332317E-07	5.552470F-03	0.0

NADC-73235-30

FICENVALUE = 7.203555E+03

## REAL EIGENVECTOR NO.

4

POINT	IP	TYPE	T1	T2	T3	R1	R2	R3
51		G	0.0	0.0	-1.376797E-01	1.32949E-02	7.697471E-03	0.0
52		G	0.0	0.0	-1.670706E-01	1.953731E-02	6.366713E-03	0.0
53		G	0.0	0.0	-2.027741E-01	2.202995E-02	2.445474E-04	0.0
54		G	0.0	0.0	-1.812658E-01	2.47397E-02	-1.028944E-02	0.0
55		G	0.0	0.0	-8.310042E-02	1.967573E-02	-2.118917E-02	0.0
56		G	0.0	0.0	9.817879E-02	-1.649235E-04	-1.920182E-02	0.0
57		G	0.0	0.0	9.847440E-02	-3.101392E-02	1.361844E-02	0.0
58		G	0.0	0.0	-2.893109E-02	-6.97510E-02	7.504818E-02	0.0
59		G	0.0	0.0	7.618705E-02	1.378653E-03	0.0	0.0
60		G	0.0	0.0	2.567735E-02	1.369335E-03	3.027650E-03	0.0
61		G	0.0	0.0	0.0	1.647071E-03	7.255450E-03	0.0
62		G	0.0	0.0	-1.952557E-02	8.710231E-03	4.552279E-02	0.0
63		G	0.0	0.0	-7.277377E-02	1.594149E-02	3.348466E-03	0.0
64		G	0.0	0.0	-4.004530E-01	2.124145E-02	4.150321E-04	0.0
65		G	0.0	0.0	-1.055141E-01	2.550029E-02	-6.72076E-03	0.0
66		G	0.0	0.0	-6.073946E-02	2.672291E-02	-1.51417E-02	0.0
67		G	0.0	0.0	2.492646E-02	2.191470E-02	-1.77652E-02	0.0
68		G	0.0	0.0	8.509777E-02	4.17015E-03	-1.7965180E-03	0.0
69		G	0.0	0.0	-1.715871E-02	-2.526971E-02	3.486147E-02	0.0
70		G	0.0	0.0	-2.353985E-01	-5.653149E-02	4.787484E-02	0.0
71		G	0.0	0.0	1.792567E-02	1.260073E-02	3.742406E-04	0.0
72		G	0.0	0.0	2.76577E-02	1.204224E-02	1.173810E-02	0.0
73		G	0.0	0.0	1.101629E-02	2.207240E-02	-2.152490E-03	0.0
74		G	0.0	0.0	1.535861E-02	3.053222E-02	-8.171203E-02	0.0
75		G	0.0	0.0	4.033174E-02	3.660964E-02	-1.387179E-02	0.0
76		G	0.0	0.0	1.033695E-01	3.955225E-02	-1.813712E-02	0.0
77		G	0.0	0.0	1.428072E-01	3.481924E-02	-1.016325E-02	0.0
78		G	0.0	0.0	8.117388E-02	1.537598E-02	2.114368E-02	0.0
79		G	0.0	0.0	-1.495183E-01	-1.517409E-02	5.245024E-02	0.0
80		G	0.0	0.0	-2.143991E-01	-3.74443E-02	7.306877E-02	0.0
81		G	0.0	0.0	5.00219E-01	8.422933E-02	-2.200574E-02	0.0
82		G	0.0	0.0	4.920545E-01	7.247899E-02	-7.167894E-02	0.0
83		G	0.0	0.0	2.572401E-01	9.177909E-02	-4.260774E-02	0.0
84		G	0.0	0.0	6.302687E-01	9.572471E-02	-4.308538E-02	0.0
85		G	0.0	0.0	7.121262E-01	1.190742E-01	-4.666238E-02	0.0
86		G	0.0	0.0	9.594897E-01	1.220239E-01	-1.965155E-02	0.0
87		G	0.0	0.0	4.284333E-01	9.432935E-02	2.40607E-02	0.0
88		G	0.0	0.0	5.905705E-01	7.206423E-02	6.555269E-02	0.0
89		G	0.0	0.0	-5.735866E-01	-1.873763E-02	7.861570E-02	0.0
101		G	0.0	0.0	3.107199E-02	6.51212E-04	0.0	0.0
102		G	0.0	0.0	2.285905E-02	3.171276E-02	2.114270E-03	0.0
103		G	0.0	0.0	-1.809259E-02	5.367181E-02	4.286961E-03	0.0
104		G	0.0	0.0	9.239825E-02	2.587952E-03	9.064671E-03	0.0
105		G	0.0	0.0	-6.811735E-02	9.491437E-03	7.493574E-03	0.0
106		G	0.0	0.0	-6.121259E-02	2.941926E-03	1.174188E-02	0.0
107		G	0.0	0.0	-4.515899E-02	1.206549E-02	4.450074E-02	0.0
111		G	0.0	0.0	-8.1039470E-01	-8.524989E-02	5.061123E-02	0.0
112		G	0.0	0.0	-3.654012E-01	-8.150494E-02	4.685091E-02	0.0
113		G	0.0	0.0	6.115523E-01	-7.736531E-02	3.781044E-02	0.0
114		G	0.0	0.0	1.060000E+00	-8.243619E-02	4.245555E-02	0.0

FICENVLUF = 8.120970E+05

POINT ID.	TYPE	T1	T2	T3	R1	R2	P3
1	G	0.0	0.0	2.643971E-03	-4.256512E-04	3.886738E-04	0.0
2	G	0.0	0.0	-6.641309E-04	-1.372972E-04	3.063942E-04	0.0
3	G	0.0	0.0	-5.774910E-03	-7.903675E-05	9.752024E-04	0.0
4	G	0.0	0.0	-1.913630E-02	3.150563E-04	2.434929E-07	0.0
5	G	0.0	0.0	-4.675139E-02	1.011732E-03	4.173677E-03	0.0
6	G	0.0	0.0	-8.013794E-02	3.875534E-03	3.752166E-07	0.0
7	G	0.0	0.0	-8.814371E-02	6.305410E-03	-1.212172E-03	0.0
8	G	0.0	0.0	-3.718762E-02	6.997935E-03	-8.552765E-03	0.0
9	G	0.0	0.0	3.312110E-02	5.712998E-07	-4.406054E-03	0.0
10	G	0.0	0.0	5.200540E-04	5.449545E-07	1.036453E-02	0.0
11	G	0.0	0.0	1.128572E-03	7.595534E-05	0.0	0.0
12	G	0.0	0.0	9.177485E-04	7.983030E-05	1.248175E-04	0.0
13	G	0.0	0.0	0.0	-5.348213E-05	2.005470E-04	0.0
14	G	0.0	0.0	-2.497434E-03	1.132230E-04	0.094092E-04	0.0
15	G	0.0	0.0	-1.064901E-02	1.669517E-04	1.529892E-03	0.0
16	G	0.0	0.0	-2.797423E-02	7.752235E-04	2.817522E-03	0.0
17	G	0.0	0.0	-2.503223E-02	1.901121E-03	3.610077E-03	0.0
18	G	0.0	0.0	-7.624092E-02	3.565516E-03	1.774099E-03	0.0
19	G	0.0	0.0	-6.221073E-02	5.349378E-07	-4.454485E-03	0.0
20	G	0.0	0.0	3.403330E-03	6.247654E-03	-9.524005E-07	0.0
21	G	0.0	0.0	2.938698E-02	7.969918E-03	-4.555098E-04	0.0
22	G	0.0	0.0	-2.757927E-02	1.312397E-02	2.67517E-02	0.0
23	G	0.0	0.0	2.001819E-03	1.451043E-04	0.0	0.0
24	G	0.0	0.0	1.954791E-03	0.477637E-05	3.377409E-04	0.0
25	G	0.0	0.0	0.0	-5.296753E-05	5.464070E-04	0.0
26	G	0.0	0.0	-2.459032E-03	5.480511E-04	1.150597E-03	0.0
27	G	0.0	0.0	-1.741044E-02	7.261637E-04	2.072348E-03	0.0
28	G	0.0	0.0	-3.717022E-02	1.232447E-07	3.147443E-03	0.0
29	G	0.0	0.0	-6.031831E-02	1.694020E-03	2.397468E-03	0.0
30	G	0.0	0.0	-6.306399E-02	2.625171E-03	-1.377591E-03	0.0
31	G	0.0	0.0	-2.423242E-02	4.702994E-03	-8.185743E-03	0.0
32	G	0.0	0.0	5.171474E-02	8.415913E-03	-8.979417E-03	0.0
33	G	0.0	0.0	7.452006E-02	1.326075E-02	5.991112E-03	0.0
34	G	0.0	0.0	-4.904618E-02	2.169867E-02	7.370147E-02	0.0
35	G	0.0	0.0	5.587614E-03	3.285840E-04	0.0	0.0
36	G	0.0	0.0	4.773835E-03	1.876173E-04	6.194817E-04	0.0
37	G	0.0	0.0	0.0	-1.930275E-04	1.093775E-03	0.0
38	G	0.0	0.0	-9.053711E-03	9.072508E-04	1.637067E-03	0.0
39	G	0.0	0.0	-2.458929E-02	7.635737E-04	2.967515E-03	0.0
40	G	0.0	0.0	-4.844613E-02	2.761125E-04	3.178884E-03	0.0
41	G	0.0	0.0	-6.234120E-02	-1.069963E-04	2.323090E-04	0.0
42	G	0.0	0.0	-4.195923E-02	1.001492E-03	-6.104744E-03	0.0
43	G	0.0	0.0	2.617022E-02	5.169726E-03	-1.238881E-02	0.0
44	G	0.0	0.0	1.067397E-01	1.372607E-02	-8.050842E-03	0.0
45	G	0.0	0.0	9.557102E-02	1.306433E-02	1.310172E-02	0.0
46	G	0.0	0.0	-7.607812E-02	2.095777E-02	7.571760E-02	0.0
47	G	0.0	0.0	1.113612E-02	5.377349E-04	0.0	0.0
48	G	0.0	0.0	9.299804E-07	4.565417E-04	1.155160E-03	0.0
49	G	0.0	0.0	0.0	1.701415E-04	1.943462E-03	0.0
50	G	0.0	0.0	-3.001537E-07	6.064455E-04	3.750600E-03	0.0

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EIGENVALUE = 8.120999E+05

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	-4.714729E-02	-1.188324E-03	4.674383E-07	0.0
2	G	0.0	0.0	-6.829809E-02	-7.316385E-03	2.570306E-03	0.0
3	G	0.0	0.0	-5.449549E-02	-4.742595E-03	-7.601494E-03	0.0
4	G	0.0	0.0	-6.333056E-03	-5.415745E-04	-1.256647E-02	0.0
5	G	0.0	0.0	9.652773E-02	8.097768E-03	-1.748982E-02	0.0
6	G	0.0	0.0	1.741490E-01	2.129426E-02	-2.943747E-03	0.0
7	G	0.0	0.0	1.131477E-01	7.943017E-02	2.257359E-02	0.0
8	G	0.0	0.0	-1.119444E-01	1.971772E-02	3.021096E-02	0.0
9	G	0.0	0.0	1.212477E-02	-9.132711E-05	0.0	0.0
10	G	0.0	0.0	9.059494E-03	-3.757375E-04	1.468115E-03	0.0
11	G	0.0	0.0	7.0	-1.969111E-03	3.412531E-03	0.0
12	G	0.0	0.0	-2.229523E-02	1.181527E-04	5.972761E-03	0.0
13	G	0.0	0.0	-4.343101E-02	-7.773490E-03	6.757742E-03	0.0
14	G	0.0	0.0	-1.016246E-01	-1.076672E-02	9.102765E-04	0.0
15	G	0.0	0.0	-6.442731E-02	-1.116254E-02	-9.787735E-03	0.0
16	G	0.0	0.0	4.246944E-02	-1.504949E-03	-2.119551E-02	0.0
17	G	0.0	0.0	1.425981E-01	1.584157E-02	-2.293367E-02	0.0
18	G	0.0	0.0	2.475524E-01	3.387659E-02	-2.740803E-03	0.0
19	G	0.0	0.0	1.194412E-01	4.054747E-02	3.119659E-02	0.0
20	G	0.0	0.0	-1.425677E-01	3.164394E-02	4.506617E-02	0.0
21	G	0.0	0.0	-7.102623E-02	-7.290725E-03	1.323151E-02	0.0
22	G	0.0	0.0	-1.551705E-01	-2.103759E-02	-3.167232E-04	0.0
23	G	0.0	0.0	-1.869072E-01	-2.351304E-02	8.474308E-03	0.0
24	G	0.0	0.0	-1.759096E-01	-2.976700E-02	-2.921393E-03	0.0
25	G	0.0	0.0	-6.795522E-02	-2.288598E-02	-2.177746E-02	0.0
26	G	0.0	0.0	1.322540E-01	0.310378E-04	-3.406521E-02	0.0
27	G	0.0	0.0	3.236720E-01	3.241715E-02	-2.961541E-02	0.0
28	G	0.0	0.0	5.533809E-01	5.587979E-02	3.196714E-03	0.0
29	G	0.0	0.0	1.469745E-01	5.722913E-02	3.837885E-02	0.0
30	G	0.0	0.0	-1.715302E-01	5.452897E-02	2.862395E-02	0.0
31	G	0.0	0.0	-1.009300E+00	-1.551875E-01	4.461308E-02	0.0
32	G	0.0	0.0	-9.825501E-01	-1.391095E-01	5.177208E-02	0.0
33	G	0.0	0.0	-9.873935E-01	-1.394109E-01	2.480084E-02	0.0
34	G	0.0	0.0	-6.558068E-01	-1.370722E-01	-2.578478E-02	0.0
35	G	0.0	0.0	-9.274488E-02	-7.624013E-02	-9.749810E-02	0.0
36	G	0.0	0.0	5.744506E-01	7.088511E-02	-9.430555E-02	0.0
37	G	0.0	0.0	8.238105E-01	1.061524E-01	-4.331606E-02	0.0
38	G	0.0	0.0	6.437174E-01	1.091936E-01	2.713997E-02	0.0
39	G	0.0	0.0	8.475784E-02	7.970770E-02	5.517522E-02	0.0
40	G	0.0	0.0	1.244931E-02	-2.487126E-04	0.0	0.0
41	G	0.0	0.0	9.691557E-03	6.490477E-04	1.266902E-03	0.0
42	G	0.0	0.0	1.147845E-03	9.693555E-04	2.624240E-03	0.0
43	G	0.0	0.0	-1.089262E-02	-7.703225E-03	4.756577E-03	0.0
44	G	0.0	0.0	-1.780944E-02	6.729333E-04	3.786129E-03	0.0
45	G	0.0	0.0	-2.912025E-02	-3.002276E-03	7.347680E-03	0.0
46	G	0.0	0.0	-5.317308E-02	-3.952367E-03	7.346364E-03	0.0
47	G	0.0	0.0	-2.903496E-01	1.211750E-02	4.584274E-02	0.0
48	G	0.0	0.0	-1.855494E-01	1.352614E-02	4.433388E-02	0.0
49	G	0.0	0.0	-9.942449E-03	2.172618E-02	3.403950E-02	0.0
50	G	0.0	0.0	3.195707E-02	2.116023E-02	7.426719E-02	0.0

NADC-73235-30

EIGENVALUE = 1.757250E+06

REAL EIGENVALUE CTOR NO.

6

R3

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	1.0	0.0	1.000000E+00	-2.778291E-01	1.345182E-01	0.0
2	G	0.0	0.0	1.51650E-01	-4.933028E-02	2.659123E-02	0.0
3	G	0.0	0.0	1.94952E-03	-3.248711E-03	5.977687E-03	0.0
4	G	0.0	0.0	-0.401420E-03	9.667759E-04	7.975073E-04	0.0
5	G	0.0	0.0	-1.121184E-02	1.173535E-03	2.099200E-04	0.0
6	G	0.0	0.0	-9.747662E-03	1.145582E-03	-2.559985E-04	0.0
7	G	0.0	0.0	-4.006002E-03	8.247701E-04	-7.232549E-04	0.0
8	G	0.0	0.0	7.753408E-03	1.911233E-04	-6.60772E-04	0.0
9	G	0.0	0.0	4.894130E-03	-1.853717E-04	3.221132E-04	0.0
10	G	0.0	0.0	6.809540E-04	5.002252E-05	7.785977E-04	0.0
11	G	0.0	0.0	-3.593325E-03	-2.479760E-04	0.0	0.0
12	G	0.0	0.0	-2.723646E-03	-7.907511E-04	-4.749222E-04	0.0
13	G	0.0	0.0	0.0	-2.690963E-03	-1.147456E-03	0.0
14	G	0.0	0.0	-4.909217E-03	1.174729E-03	2.835886E-04	0.0
15	G	0.0	0.0	-5.559742E-03	7.727913E-04	2.75302E-04	0.0
16	G	0.0	0.0	-7.317494E-03	7.415421E-04	2.15272E-04	0.0
17	G	0.0	0.0	-7.729134E-03	8.517539E-04	-7.570764E-05	0.0
18	G	0.0	0.0	-5.229611E-03	8.123395E-04	-4.273191E-04	0.0
19	G	0.0	0.0	1.018909E-04	5.292592E-04	-6.92698E-04	0.0
20	G	0.0	0.0	4.896314E-03	4.673373E-05	-2.592718E-04	0.0
21	G	0.0	0.0	3.542224E-03	-6.294944E-05	5.788123E-04	0.0
22	G	0.0	0.0	-1.747130E-03	4.660771E-04	5.199639E-04	0.0
23	G	0.0	0.0	7.433751E-04	5.234255E-04	0.0	0.0
24	G	0.0	0.0	6.459214E-04	5.712947E-04	6.263700E-04	0.0
25	G	0.0	0.0	0.0	7.237176E-04	3.112789E-04	0.0
26	G	0.0	0.0	-1.740507E-03	3.738670E-04	1.946483E-04	0.0
27	G	0.0	0.0	-3.882365E-03	5.051451E-04	4.029348E-05	0.0
28	G	0.0	0.0	-4.834225E-03	6.151945E-04	-2.297741E-04	0.0
29	G	0.0	0.0	-3.953355E-03	6.484859E-04	-5.049222E-04	0.0
30	G	0.0	0.0	-8.007742E-04	5.557564E-04	9.680494E-05	0.0
31	G	0.0	0.0	3.439065E-03	3.096674E-04	6.566977E-04	0.0
32	G	0.0	0.0	5.310111E-03	9.236155E-05	-1.743690E-05	0.0
33	G	0.0	0.0	1.057413E-03	7.350431E-05	0.0	0.0
34	G	0.0	0.0	-1.826584E-03	4.297910E-04	1.785145E-04	0.0
35	G	0.0	0.0	1.057440E-03	-1.541249E-04	1.907269E-04	0.0
36	G	0.0	0.0	1.137987E-03	-1.639205E-04	4.162909E-05	0.0
37	G	0.0	0.0	0.0	-1.013944E-04	4.1339764E-04	0.0
38	G	0.0	0.0	-1.427621E-03	2.379592E-04	-3.59071E-04	0.0
39	G	0.0	0.0	-2.271718E-03	3.324175E-04	4.124951E-04	0.0
40	G	0.0	0.0	-2.092357E-03	4.537172E-04	5.474540E-04	0.0
41	G	0.0	0.0	-3.327352E-04	4.483101E-04	-2.714837E-04	0.0
42	G	0.0	0.0	2.739321E-03	3.618780E-04	4.024951E-04	0.0
43	G	0.0	0.0	5.470991E-03	1.855737E-04	5.474540E-04	0.0
44	G	0.0	0.0	4.778493E-03	3.637173E-05	-5.591146E-05	0.0
45	G	0.0	0.0	0.228349E-04	1.590933E-04	7.299777E-05	0.0
46	G	0.0	0.0	-9.741772E-04	4.392755E-04	4.491107E-04	0.0
47	G	0.0	0.0	5.237522E-04	-3.952672E-05	2.807379E-05	0.0
48	G	0.0	0.0	0.000399E-04	-1.279912E-05	0.0	0.0
49	G	0.0	0.0	0.0	4.835214E-05	0.0	0.0
50	G	0.0	0.0	-2.537077E-04	9.515079E-05	0.0	0.0



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EIGENVALUE = 1.757355E+06

POINT ID.	TYPE	T1	T2	T3	R1	R2	P3
51	G	0.0	0.0	-5.30514E-04	2.412269E-04	-9.313022E-05	0.0
52	G	0.0	0.0	2.861433E-04	2.77172E-04	-2.746272E-04	0.0
53	G	0.0	0.0	2.883434E-03	2.762475E-04	-4.111344E-04	0.0
54	G	0.0	0.0	5.047343E-07	1.374219E-04	-3.036759E-04	0.0
55	G	0.0	0.0	2.927574E-03	2.355831E-05	1.327485E-04	0.0
56	G	0.0	0.0	3.117233E-03	-1.474649E-04	6.017274E-04	0.0
57	G	0.0	0.0	-4.552902E-04	-5.309742E-05	2.486792E-04	0.0
58	G	0.0	0.0	1.571163E-04	4.904067E-04	-1.926370E-04	0.0
59	G	0.0	0.0	3.752478E-04	-4.513352E-06	0.0	0.0
60	G	0.0	0.0	2.742741E-04	2.500955E-07	3.700269E-05	0.0
61	G	0.0	0.0	0.0	2.255551E-05	2.764790E-05	0.0
62	G	0.0	0.0	-2.800419E-05	6.345543E-05	-1.512352E-05	0.0
63	G	0.0	0.0	8.211457E-04	8.767044E-05	-1.981714E-04	0.0
64	G	0.0	0.0	2.656710E-03	1.277193E-04	-3.769021E-04	0.0
65	G	0.0	0.0	5.047155E-07	1.660039E-04	-3.672076E-04	0.0
66	G	0.0	0.0	6.311425E-03	8.537349E-05	-2.72016E-05	0.0
67	G	0.0	0.0	4.664988E-07	-2.584670E-04	5.542912E-04	0.0
68	G	0.0	0.0	7.068300E-04	-5.700063E-04	6.503542E-04	0.0
69	G	0.0	0.0	-8.657301E-04	-5.200474E-04	-2.856313E-05	0.0
70	G	0.0	0.0	1.059600E-07	-3.711442E-05	-4.753302E-04	0.0
71	G	0.0	0.0	1.150681E-04	-4.269272E-05	-2.113949E-05	0.0
72	G	0.0	0.0	3.406053E-04	-3.865532E-05	-1.544509E-04	0.0
73	G	0.0	0.0	1.092531E-03	-1.715623E-04	-3.410190E-04	0.0
74	G	0.0	0.0	4.427957E-03	-7.327925E-05	-4.701937E-04	0.0
75	G	0.0	0.0	6.344678E-03	7.05591E-06	-1.920857E-04	0.0
76	G	0.0	0.0	5.147178E-07	-2.670452E-04	5.001692E-04	0.0
77	G	0.0	0.0	5.256990E-04	-1.017629E-03	1.51572E-03	0.0
78	G	0.0	0.0	-3.473734E-03	-1.554183E-03	6.59097E-04	0.0
79	G	0.0	0.0	-2.546172E-03	-1.365585E-03	-2.750792E-04	0.0
80	G	0.0	0.0	1.529419E-03	-1.219945E-03	-1.047320E-03	0.0
81	G	0.0	0.0	-1.125077E-02	-2.576557E-03	1.604704E-04	0.0
82	G	0.0	0.0	-9.726325E-03	-2.304167E-03	7.364474E-05	0.0
83	G	0.0	0.0	-7.451119E-03	-1.747551E-03	-3.972985E-04	0.0
84	G	0.0	0.0	1.134700E-03	-1.122452E-03	-6.513443E-05	0.0
85	G	0.0	0.0	-3.339107E-03	-1.399279E-03	2.00007E-03	0.0
86	G	0.0	0.0	-1.616444E-02	-3.649174E-03	3.222999E-03	0.0
87	G	0.0	0.0	-2.343755E-02	-5.337075E-03	2.079823E-03	0.0
88	G	0.0	0.0	-1.801539E-02	-4.734629E-03	-4.672909E-05	0.0
89	G	0.0	0.0	-5.105404E-03	-2.478785E-03	-8.431085E-04	0.0
90	G	0.0	0.0	4.153093E-04	-1.287413E-05	0.0	0.0
91	G	0.0	0.0	3.078951E-04	2.555554E-05	3.562883E-05	0.0
92	G	0.0	0.0	1.832727E-05	5.766635E-05	4.523794E-05	0.0
93	G	0.0	0.0	9.812593E-05	7.07764E-05	3.947195E-05	0.0
94	G	0.0	0.0	-9.612595E-04	2.701440E-04	7.728924E-05	0.0
95	G	0.0	0.0	-3.534754E-04	1.328277E-04	8.792278E-05	0.0
96	G	0.0	0.0	1.997729E-04	6.891055E-05	-0.273295E-05	0.0
97	G	0.0	0.0	5.791224E-03	8.03353E-04	-5.00133E-04	0.0
98	G	0.0	0.0	2.790525E-03	7.238171E-04	-4.27261E-04	0.0
99	G	0.0	0.0	-4.871197E-07	8.57877E-04	-4.473074E-04	0.0
100	G	0.0	0.0	-0.43125E-03	9.049619E-04	-5.548357E-04	0.0



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